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# TREATMENT OF SINUSITIS

**Kenneth L. Craft, M.D., Indianapolis**

• *The treatment of sinusitis depends on the etiology, whether infectious or allergic. If it is the latter, the use of antibiotics is doubly inappropriate. The indiscriminate use of nose drops is especially to be condemned in chronic cases; in acute sinusitis, however, nose drops are justifiably used for vasoconstricting effects and to promote drainage. Chronic sinusitis often represents an allergy. Advanced forms of it are likely to be accompanied by secondary infections. A case history is given to illustrate the need of considering both the allergic and the infectious aspects of sinusitis and of intervening surgically when medical treatment proves inadequate.*

Sinusitis may be classified as either infectious or allergic in its origin, and the proper treatment of any given case will depend upon exact distinction between these two etiological factors. Differentiation between cases due to infection and those due to allergy can be made with the aid of a carefully taken history, observation of the gross appearance of the nasal mucous membrane and the nature of the nasal secretions, cytological examination of the nasal discharge, x-ray films, and biopsy of polypoid tissue, if present.

Most of the acute cases of sinus infection will respond favorably to local treatment directed toward shrinking the swollen nasal mucous membrane and securing ventilation and drainage of the sinuses involved. The indiscriminate use of nose drops has been condemned rightfully, but their use by the patient with acute sinusitis often is helpful and justified. The use of pain-relieving drugs may be necessary for the patient's comfort. The application of heat is also helpful in this respect. Frequently, the use of the antibiotic drugs helps to control the infection, but the possibility of allergic sensitization to drugs of this type must be borne in mind and guarded against. Occasionally all of these measures will fail, and surgical procedures must be used to provide drainage, to relieve pain, and to prevent serious complications.

Chronic sinusitis always suggests the presence of allergic sensitization as the basic etiological factor. Such authorities as Derlacki,[1] Hansel,[2] Kuhn,[3] and Shambaugh[4] feel that allergy is the direct, basic cause of chronic sinusitis in the great majority of cases. Specific treatment for allergic sinusitis incorporates such measures as hyposensitization, elimination of certain foods from the diet, and removal of contact with other offending allergens, such as feathers, animal danders, wool, molds, and tobacco smoke. This type of treatment usually gives quite satisfactory results when the specific allergen can be found. However, for various reasons, these measures sometimes fall short of providing sufficient comfort for the patient. In these patients and in patients with acute exacerbations due to overwhelming exposure to the allergenic substance or to other influences, additional help often is available through the use of certain measures that can be classified as nonspecific or symptomatic treatment. Various drugs, for instance, used internally or parenterally, often are very helpful. Among these agents may be mentioned ephedrine; calcium; atropine; endocrine gland preparations, especially thyroid; potassium; antihistamines; and corticotropin and cortisone.

The care of the household in general and of the bedroom, especially, is very important to the patient with allergic sinusitis. Effective measures should be directed against the formation of house dust at its sources and against its circulation in the air currents through the house. The bedroom should be well ventilated but kept at an even temperature, preferably not below 60 to 65 F. The use of air-conditioning apparatus to remove dust and of electric dehumidifiers in the basement to eliminate dampness and the growth of mold is very helpful.

The patient suffering from advanced allergic sinusitis is quite likely to develop secondary infection of the sinuses. A patient with this combined type of disease requires not only control of the allergy factor but also treatment directed toward elimination of the infection. With infection in the acute stage, local treatment and the other measures mentioned earlier may be sufficient. In the presence of chronic infection, how-

Assistant Professor, Department of Otolaryngology, Indiana University School of Medicine.
Read in the Symposium on Otolaryngologic Therapy before the Section on Laryngology, Otology, and Rhinology at the 105th Annual Meeting of the American Medical Association, Chicago, June 14, 1956.

ever, irrigation of the sinuses, resection of a nasoantral window, or more radical surgical procedures to remove thickened pyogenic membranes and to provide proper ventilation and drainage may be required.

The patient with sinusitis, whether it is of allergic or infectious origin or a combined type, especially needs free breathing space and good ventilation and drainage of the sinuses. He should be provided, as nearly as possible, with normal function of his nose, and often this will require the use of all the therapeutic measures available. If submucous resection or a sinus operation is indicated, it should not be withheld merely because of the presence of allergy. The allergy factor, however, should be controlled, if possible, prior to the operation, unless the operation is of an emergency nature.

I would like to report a case of the combined type of sinusitis that included both allergy and infection in its etiology.

## Report of a Case

A 6-year-old boy was referred to me in October, 1955, by an otolaryngologist in a neighboring city. The patient complained of nasal blocking and discharge of one and a half years' duration, croupy cough, and much aching of the legs during the fall and winter of 1954-1955. Tonsillectomy and adenoidectomy had been performed in June, 1955, with much improvement of all complaints resulting until the middle of September. Since that time he had had recurrence of the nasal blocking and discharge and cough. From the patient's history, it was found that his grandmother has asthma, his mother has eczematous skin rash, and two aunts have nasal allergy.

On examination, the nasal membranes were found to be swollen and pale. There was mucopurulent discharge bilaterally. Transillumination showed that both maxillary sinuses were cloudy, with the right sinus being the worst. A nasal smear contained many eosinophils. The patient had a positive skin reaction to house dust. The impression was of allergic sinusitis plus secondary sinus infection. It was thought that the recurrence of symptoms in the fall was due to house-dust sensitization. This opinion was based upon the improvement shown during the summer months, with relapse in the early fall. It is quite typical for the condition of dust-sensitive patients to improve spontaneously in the summertime and to regress in the autumn months.

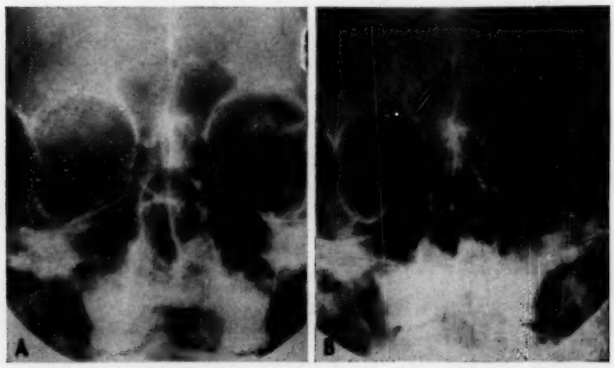


Fig. 1.—*A*, roentgenogram of sinuses, showing clouding of right maxillary sinus and ethmoids. *B*, roentgenogram showing better aeration and improvement in thickening in soft part of right maxillary sinus one month later, after resection of right nasoantral window.

In deciding on treatment, it was felt that, if the allergy factor could be controlled, the complicating sinus infection might clear up spontaneously. Hyposensitization treatment with the use of house-dust extract was begun, but no improvement was made during several weeks of treatment. Also, the leg pains recurred. X-rays of the sinuses at this time showed clouding of the right maxillary sinus and ethmoids (fig. 1*A* and 2*A*). The use of loc shrinking treatment in the nose, with the use of nose drops home, was advised. Novahistine-DH (a preparation containi phenylephrine hydrochloride and prophenpyridamine maleate was prescribed for the cough. The injections of dust extract we kept up; I felt that I was on the right track in this respect, sinc the patient had suffered acute exacerbations of his symptom upon two successive occasions immediately after he received h injection. This seemed to indicate definitely that the boy w sensitive to the dust allergen but was being given an overdos

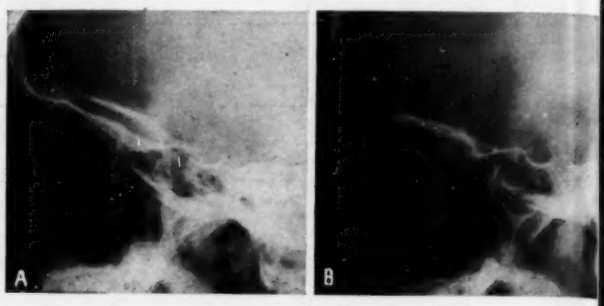


Fig. 2.—*A*, roentgenogram showing lateral view of cloudi of right maxillary sinus and ethmoids. *B*, roentgenogram showi improvement one month later, after resection of right nasoantr window.

The dosage was reduced, and, under the new regimen, includi the local treatment, the patient soon made considerable i provement. Upon his next visit he seemed to be much bett His mother told me that his condition remained satisfactory long as he received his treatments regularly but that if he we longer than three to four days without local treatment he wou have a relapse, with return of cough, nasal blocking, and di charge.

Resection of a right nasoantral window was advised. Aft this procedure and subsequent regular irrigations of the max lary sinus, the patient made early and continued improveme Another x-ray at this time showed better aeration and improv ment in the thickening in the soft part of the right maxilla sinus (fig. 1*B* and 2*B*). It was now felt that further treatme for allergy might be dispensed with, and the injections of du extract were discontinued. However, nasal blocking and muco discharge soon returned. The treatment for dust sensitivity th was resumed, again with early improvement and control of t allergic condition.

I saw this patient on May 5, 1956. The report was that h had been "just fine" since March 1, with no symptoms and n local treatment of the nose or sinuses since that date. Hyp sensitization to dust has been continued, and at present the bo is receiving an optimum maintenance dose every three weeks. saw the patient again in August. There has been no recurren of any of the symptoms, the nose and sinuses are clear, and t boy feels and looks well and has no complaints.

## Comment

This case report illustrates, I believe, the impor ance both of recognizing the various etiological factor that may be present in a given case of sinusitis and o applying the proper treatment for allergy and for in fection when both factors are present.

1002 Hume Mansur Bldg.

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# USE OF HORMONES IN TREATMENT OF OTOLARYNGOLOGIC DISEASE

Max Samter, M.D., Chicago

• *Fundamental questions remain to be answered as to the place of hormones in the treatment of diseases of the ear, nose, and throat. Local edema can be controlled by administering corticotropin and corticosteroids, but it is not certain that short-term relief promises long-term results. The fact that the adrenal cortex does not always release its hormones for the suppression of inflammatory reactions suggests the possibility that such reactions have some as yet unknown advantages to the body. Nasal symptoms that are clearly of infectious origin not only fail to benefit from administration of corticosteroids but eventually become unmanageable after it. Nasal polyps generally shrink during systemic hormone therapy but recur when it is discontinued; yet hormone therapy is more often than not preferable to polypectomy. While continued hormone therapy has an impressive number of incidental risks, withdrawal, too, requires careful planning. Despite these difficulties, there are absolute indications for the use of hormones, namely life-endangering allergies that resist routine management and chronic noninfectious inflammatory reactions that threaten to cause permanent structural damage.*

It is, indeed, a privilege but also a risk for an "outsider" to talk about some of the therapeutic aspects of the diseases of the ear, nose, and throat. It is obvious that I must limit my remarks to broad principles rather than to specific detail; even so, a discussion of treatment is always more risky than a discussion of etiology, because etiological concepts appear to be relatively stable, while the approach to treatment is often a matter of personal opinion and, perhaps, prejudice.

Our approach to infectious diseases, for instance, is a case in point. In the early decades of the century, most of our efforts were directed toward the production of active immunity. Since the discovery of the sulfonamides and of the antibiotics, chemotherapeutic agents have become our primary line of defense, because they do not require as much participation by the patient's body and act without delay. Active immunity has found its most fertile area in the field of preventive medicine, in which it has been eminently successful.

Yet, we may approach another turn of the road. Mark H. Lepper, with whom I discussed the topic of this symposium, mentioned the fact that in rickettsial infections antibodies must be allowed to develop in order to prevent relapses. My father treated measles by attempting to enhance the immunological response and to precipitate the development of the exanthem with hot packs and sweating. So much has changed since then. Like most physicians, I am treating measles by the administration of immune serum, globulin, the therapeutic procedure that tends to abort the disease rather than to encourage an allergic response in tissues.

## Inflammatory Reactions

As children of the era of corticotropin and the corticosteroids, we have the good fortune of owning an effective tool that can suppress selected phases of inflammation regardless of its origin. Edema, for instance, is a component of all inflammatory reactions. Other changes also occur: Rappaport and his coworkers have described a decrease in the glycoprotein staining of connective-tissue cells, of ground substance, and of basement membranes of surface epithelium, capillaries, and glands as well as changes in the interepithelial cement of surface and gland cells and in the mucigen granules.

Edema, however, is the most discomforting byproduct of inflammatory disease, and all of the changes, including edema, are controlled by the administration of corticotropin and corticosteroids. Accordingly, these agents have been used so extensively that it seems appropriate to relax and to review whether such large-scale administration of powerful therapeutic agents is justified and, in fact, beneficial if judged by long-term results rather than by short-term relief.

The question has theoretical and practical aspects. In principle, one might assume that the body is capable of developing both useful and useless inflammation. Antibodies are capable not only of preventing but also of causing disease—a fact that has received much attention in current research. In a recent address, Schick stated that altered reactivity of tissues occurs in two forms: "One is a physiologic and beneficial form, making it possible to fight against diseases due to the invasion of pathogenic microorganisms and leading to immunity. The other form develops after invasion or injection of foreign-protein which as a foreign substance must be eliminated. This elimination is carried out with a similar mechanism of defense, but the allergy is undesirable, harmful and therefore pathogenic."

Even the allergic edema, however, might have a purpose; it might wash out, dilute, and prevent the absorption of allergens to which, to use an example from the field of rhinology, the nasal mucous membranes have been exposed. In other words, it seems difficult to decide which type of inflammation may be useful and which detrimental. Since it seems certain that the adrenal cortex stores a supply of corticosteroids that is capable, if released, of suppressing inflammatory reactions yet obviously does not release it, one wonders whether most of these inflammations might have a biological meaning even if the significance escapes us at this time.

From the Department of Medicine, University of Illinois College of Medicine.

Read in the Symposium on Otolaryngologic Therapy before the Section on Laryngology, Otology, and Rhinology at the 105th Annual Meeting of the American Medical Association, Chicago, June 14, 1956.

The basic factors that control the course of inflammation are not known to us. Some inflammations of either type, for instance, might progress into an irreversible state of fibrosis. Although formation of scar tissue must be regarded as a mechanism of repair, it does not always represent a desirable form of healing. The fibrotic lung is not a healthy lung, and patients with generalized arteritis have died after the administration of corticotropin and corticosteroids because the return of normal connective tissue produced an occlusion of the vascular bed as a direct result of efforts designed to restore normal structure.

### Indications for Use of Hormones

The otolaryngologist observes many types of inflammatory reactions of the nose and of the paranasal sinuses. Some of these are localized and some are part of a generalized inflammation of the upper and lower parts of the respiratory tract. Which of these inflammations should be regarded as an indication for the use of corticotropin or corticosteroids in otolaryngology? The answer is not easy, but this is the broad conclusion: very few, and certainly fewer than have been treated by the administration of the hormones in recent years.

As a rule of thumb, one might say that corticosteroids have no place in the treatment of acute or subacute nasal conditions, whatever their etiology. Nasal symptoms that are clearly of infectious origin might require the administration of antibiotics and perhaps drainage, but they will, as a rule, not only not benefit from but eventually become unmanageable after administration of corticosteroids.

Of allergic inflammations of the nose and the paranasal sinuses, those of known etiology should be treated by the removal of the etiological agent, although, in critical disease, one should not hesitate to use the hormones in frequent and adequate doses. Hesitancy in treatment is of no avail if maximal effect must be attained within hours.

In chronic inflammations of allergic origin, corticosteroids should be given only when (1) more conservative medication has failed and (2) the clinical history of the patient and appearance of the condition suggest that a reversible disease might be followed by irreversible structural changes, e.g., the development of nasal polyps.

The treatment of nasal polyps, in fact, has become a favored field for the administration of hormones. Polyps, of course, are rather mysterious structures that may be of allergic or nonallergic origin. In addition, polyps have a peculiar functional relationship to the lungs that is as yet unexplained. In polyps of any type, however, according to F. L. Lederer, edema is the most conspicuous change. The surgical removal of polyps, the most widely employed form of therapy, is actually a desperate measure that usually starts an unending cycle of polypectomies. Topical use of hormones is of little help, but systemic administration will shrink polypoid tissue in a majority of patients. As soon as the hormones are withdrawn, the polyps recur, but the episodes of bronchial asthma that are precipitated by polypectomies in the elderly patient are sufficiently severe to justify preference for the use of corticosteroids as opposed to surgical treatment wherever possible.

The statement that I have just made seems to favor the use of corticosteroids in chronic polyposis of the nose and paranasal sinuses, but it must be qualified by a series of restrictive amendments. The effect of the hormones is temporary. If lasting results are desired, corticosteroids must be administered, as in the patient with rheumatoid arthritis, over extended periods. If such a course is given, the patient will be exposed to an impressive number of incidental risks: the perforation of an ulcer, if he is prone to the development of ulcers; the development of an emotional upheaval; difficulties in controlling infections, since early warning signals such as fever and pain are abolished; a possible increase in susceptibility to disease caused by viruses, since a large number of such diseases, e.g., mumps, poliomyelitis, influenza, and others, have invariably been made more severe in cortisone-treated animals; and a loss in adrenal reserve as the result of corticosteroid-induced functional atrophy that might render the function of the adrenal cortex deficient under stress.

It is often hazardous to withdraw corticosteroids after they have been given over a long period of time. The recurrence of somatic symptoms, coupled with a profound depression, frequently forces the physician to resume the administration of the hormones. It is much more difficult to treat a patient who has been on corticosteroid therapy than a patient who has been under conservative management during which the use of the hormones has been avoided. It has been said, on reasonable grounds, that the decision to place a patient with chronic illness on corticosteroid therapy is one that may influence his condition during the remainder of his life. While I am not convinced that this statement always holds true, withdrawal always demands a very carefully staggered regimen, including perhaps the administration of small doses of corticotropin to reactivate the adrenal cortex. Even so, the task requires not only the liberal use of supportive therapy but more than usual skill, more than usual patience, and more than usual persuasiveness by the physician, as well as the determination of the patient to see it through.

Absolute indications for the use of hormones are (1) the presence of severe allergic reactions that are resistant to routine management and yet must be controlled because they are a threat to the patient's life and (2) the presence of chronic noninfectious inflammatory reactions of nonallergic or allergic origin that tend to engender structural changes.

Absolute contraindications to the use of corticosteroids in acute disease do not exist. Even the patient who has a history of peptic ulcers or who has a severe infection might require corticosteroids for survival. The patient who is chronically ill, on the other hand, should not be placed on corticosteroid therapy if he is vulnerable in any of the areas that might become aggravated by their use. While we have learned that many patients tolerate corticosteroids unexpectedly well, the small percentage of patients

who must pay a price out of proportion to the expected benefits should serve as a yardstick for the administration of the hormones. Armstrong's remark that "the contribution of ACTH and corticosteroids to medicine includes the fact that our patients now can walk to the autopsy table" still contains an element of truth that none of us should readily dismiss.

1853 W. Polk St. (12).

References may be obtained, on request, from the author.

# TREATMENT OF TINNITUS

Clarence W. Engler, M.D., Cleveland

• *Some causes of tinnitus are known, and their removal relieves it, as in the case of drugs like quinine and the salicylates. Tinnitus caused by neural degeneration, however, represents an irreversible process. It is little affected by medication and is not relieved by any kind of surgery. Taking a careful history of the patient and performing a complete otological and physical examination helps to identify the cause. A method of approach can then be planned, some relief of symptoms may be achieved, and the mental attitude of the patient will be greatly improved.*

Tinnitus is an annoying and disturbing symptom usually of a condition or disease affecting the hearing apparatus. Two distinct types of tinnitus have been described [1]: (1) the vibratory or objective type caused by contractions of the tympanic or tubal muscles and by vascular bruits, which may be heard not only by the patient but also, at times, by the examiner, and (2) the nonvibratory or subjective type produced by involvement of some portion of the auditory apparatus. Unfortunately the organ of hearing, the cochlea, and the auditory-nerve pathways extending from it through the substance of the brain, as in the thalamus, and to and even including the auditory center in the cerebral cortex, are the structures most frequently involved. In this second type the tinnitus is audible only to the patient. It is with this type that we are concerned, because it is by far the more common; it is most annoying and irritating to the patient because it disturbs and prevents sleep. It is difficult to determine the cause, pathology, and location of the lesion in the auditory apparatus, and treatment at its best is most unsatisfactory.[2]

## Causes of Tinnitus

The conditions and diseases responsible for the involvement of the cochlea, auditory neural pathways, and their cerebral center, causing tinnitus, are many. The process is one of degeneration of the cells of these structures. Quite well known is the ringing in the ears that results from the ingestion of large dosages of quinine. Other causative drugs include the salicylates, dihydrostreptomycin sulfate, caffeine, and those delightful solaces, tobacco and alcohol. Noisy occupations are notable as causing acoustic trauma, with resulting deafness and tinnitus.

Other forms of deafness, such as Ménière's syndrome, nerve deafness, and those due to otosclerosis and the inflammatory conditions of the middle ear, are often accompanied by tinnitus. It may be present in certain of the brain tumors. Cardiovascular conditions such as hypertension, arteriosclerosis, and anemia may produce tinnitus. Allergy and endocrine disturbances may be causative factors. The pregnant woman who repeatedly complains of stuffiness and ringing in her ears and the highly wrought-up, nervous individual who is in her menopause and who claims that the noises in her ears are driving her mad are well known to all otologists. Presbycusis, the deafness of old age, with its associated tinnitus, must not be forgotten. Fatigue, emotional upsets, and stress tend to intensify the tinnitus.

From the departments of otolaryngology, Cleveland City Hospital and St. Vincent Charity Hospital, and the Western Reserve University School of Medicine.

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## Therapy

No one specific therapy suffices for the riddance of the annoying tinnitus. At the beginning of middle age most individuals experience some tinnitus.[3] Fortunately it is usually so slight that it receives no attention, and only when it becomes annoying and loud is relief sought. Explaining to the patient that the clicking in his ears on swallowing is caused by the contraction of the muscles about the palate and the eustachian tube and that the pulsating noises in his head are sounds produced in the blood vessels will very often satisfy him, and he will adjust himself to them.

In the more simple conditions, such as impacted cerumen, acute blocking of the eustachian tube, early drug neuritis of the auditory nerve, and suppurative otitis media, the etiological factors may be corrected, relieving the accompanying tinnitus. It must be remembered that, at times, the tinnitus may persist even though the middle-ear involvement has been healed.

When neural degeneration has been extensive, there is no possible reversal of the process and efforts must be directed toward lessening the tinnitus, helping the patient to accustom himself to the head noises, and assuring him that the ringing in his ears is neither an indication of nor a cause of insanity. Both Fowler [4] and Goodhill [1c] stress the importance of having a planned method of approach to the problem of tinnitus. After taking a careful history, which includes the personal habits of the patient, the condition of the home life, and the environment at work, with some inquiry into

the character of the tinnitus, followed by a complete otological and physical examination, one may determine the cause of the tinnitus and map out a plan of management and treatment. Discussion of this plan with the patient often improves his mental attitude. Reassurance that the noises in the head are not fatal and do not cause insanity, plus the explanation that most likely he will always have them and must learn to live with them and to ignore them to a degree, will put the patient in a better frame of mind. He can be told that sometimes the tinnitus lessens and may even disappear entirely. Avoidance of emotional upsets, worry, and fatigue should be stressed. It may be necessary to stop the use of tobacco, alcohol, and coffee.

The medical treatment of tinnitus has been disappointing. Barbiturates, bromides, and other tranquilizing drugs tend to calm these worried and upset patients, allowing them to secure more rest and sleep and, thus, rendering the tinnitus more tolerable. Potassium iodide in small doses has helped at times. Control of allergy in those cases in which it is the etiological factor is beneficial. The antiallergic drugs may be of service. Certain cases of tinnitus associated with dizziness have improved with the administration of histamine phosphate. It has been reported that nicotinic acid often lessens the intensity of tinnitus.[5] The use of vitamins in my patients has not controlled or decreased the tinnitus. Since endocrine dysfunction may be a causative factor, proper hormonal treatment should be tried. It is difficult to determine to what degree the improvement resulting from any form of medical treatment is psychogenic.

Before any surgical attack on the auditory apparatus for the relief of tinnitus is suggested, all types of medical treatment should have been tried. Unbearable head noises may necessitate some surgical attempt at relief. Cessation of the tinnitus after one of these operative procedures cannot be promised. Such operations and procedures as cervical sympathectomy, injection of procaine into the stellate ganglion, sectioning the cochlear branch of the auditory nerve, tympanosympathectomy, and destruction of the labyrinth have not proved their efficacy in controlling tinnitus.[6]

## Comment

In considering tinnitus it is well to remember that much more can be accomplished by treating the whole man rather than the symptom. In closing I should like to quote Goodhill,[7] who states, "The treatment of tinnitus as a disease is an illogical dream but the management of the patient with tinnitus is an every day otologic necessity."

2323 Prospect Ave.

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**Amino Acids Millions of Years Old.**—Today we can clearly trace the evolution of life back to the beginning of the Cambrian Period some 500 million years ago. In the Cambrian Period animals began to make hard inorganic substances such as shell and bone. From these hard parts we can reconstruct the outlines of soft parts—the flesh of the animals. . . . In the Geophysical Laboratory of the Carnegie Institution of Washington we have recently discovered organic material in fossils as old as 300 million years. Consider, for example, a vertebra of Stegosaurus stenops, a dinosaur which lived 150 million years ago. Suppose we take a bit of this bony material and dissolve it in hydrochloric acid. In the resulting solution we will find small amounts of various amino acids—the "building blocks" of living protein. The principal amino acids present are alamine, glutamic acid and glycine. We will also find lesser amounts of aspartic acid, isoleucine, proline and valine. We have found a similar assortment of amino acids in fossils from many geological formations. We have also examined fossils which turned out to contain no amino acids at all. Some of these were collected from formations which at some point in their history had been buried at great depth and subjected to high temperatures, which would cause amino acids to break down. . . . There is not much to be gained from a comparison of the amount of amino acids found in various fossils; the conditions under which they were preserved vary too widely. It is of considerable interest, however, that a plate from the armor of the Devonian fish Dinichthys terelli is particularly rich in amino acids. This specimen was found in the Black Shale of Ohio, which contains very little oxygen. Thus its amino acids were shielded against oxidation.—P. H. Abelson, Paleobiochemistry, *Scientific American*, July, 1956.

# MALIGNANT TUMORS OF THE NOSE AND PARANASAL SINUSES

Kenneth D. Devine, M.D., Paul W. Scanlon, M.D.
and
Frederick A. Figi, M.D., Rochester, Minn.

• *The growth of malignant tumors in the region of the nose and paranasal sinuses is insidious. The patient in whom symptoms occur early has a surprisingly good outlook, because vigorous combined surgical and radiologic treatment can be started early. Other patients may not have symptoms until the growth is far advanced. The microscopic classification of these tumors is unsatisfactory. The rapid advances of surgery, however, make it possible to operate much more effectively and safely than ever before, with a wide exposure and with due regard to the subsequent rehabilitation of the patient. Radiotherapeutic techniques have improved. Teletherapy permits homogeneous irradiation of large masses when that is desired. The use of molds for the central positioning of radium in cavities avoids the unevenness of irradiation ordinarily caused by the rapid fall-off in dose from contact radium. External radiation is used not only for inoperable lesions but also as the sole method of therapy for patients who have lymphoma and lymphoepithelioma. The five-year survival rates for malignant tumors in this region, as reported by various contemporary groups, range from 10% to 23%.*

Most of the scientific papers concerning malignant tumors of the nose and paranasal sinuses are of two types. One type, the less common, concerns itself with the classification of the various tumors seen in this region. There are too few of these papers, probably because not many physicians have seen enough of the various types of tumors that may possibly develop in this region, other than the adenocarcinoma or epithelioma, to consider themselves experts. When an author begins to subdivide the adenocarcinomas into cylindromas, adenocystic adenocarcinomas, and others and the epitheliomas into neuroepitheliomas, lymphoepitheliomas, transitional epitheliomas, and the like, the quantities become smaller. The published tables of the types of tumors encountered invariably include a goodly number of unclassified tumors or highly undifferentiated tumors that are listed as "type undetermined." Distinct entities doubtless are buried under such headings as unclassified tumors or undifferentiated tumors, and more complete knowledge of them may make a great deal of difference in the way that they should be treated and may clear up some puzzling circumstances, such as long survival in what appeared to be a hopeless case.

The everyday working surgeon and radiologist must treat these patients according to the evidence at hand at the moment. The plan of treatment and the prognosis depend on what the pathologist tells them the tumor is from microscopic examination and on what the natural history of the tumor is. If treatment in this field is to progress, we must go back into time, review and study microscopically the tissue sections available in these cases, and decrease the number of unclassified tumors. We also must take a critical look at the undifferentiated tumors, the sarcomas, the endotheliomas, and even some of the epitheliomas that we find mentioned in our clinical records. If anyone thinks that the pathology is "cut and dried," we wish to disabuse this idea. We found it difficult to classify the various tumors microscopically when we reviewed our cases and tissue sections. Indeed, we have not yet been able to sort them out to our satisfaction.

The second and most common type of paper on this subject in the literature is concerned with treatment and end-results. Invariably, statistics from other sources are quoted and tables that compare end-results are shown. There is a certain amount of rivalry between the "knights of the bistoury," as Öhngren [1] called those who advocate sharp dissection with knife, scissors, and chisel, and those who advocate electrocoagulation. Both participants in the struggle claim the radiologist as an essential member of the team, but whether he should be admitted to the scene of the struggle before or after surgical treatment is not settled.

The purpose of this paper is to acquaint readers with the present trends and changes in the methods of treating malignant tumors of the nose and paranasal sinuses currently being used at the Mayo Clinic.

## Background

To appreciate present trends they must be seen against the background of previous events, and we shall review briefly the highlights in the history of treating tumors of this region. A convenient time to begin is the year 1848. In that year Sir William Fergusson,[2] an English surgeon, published a book. In it he wrote that operations for the removal of tumors connected with the upper jaw are by no means so modern as some seem to imagine. He realized that the surgical removal of portions or all of the upper jaw had been performed for centuries. The earliest known reference to surgical removal of a tumor of the upper jaw in English literature dates back to 1671,[3] but there are vague descriptions of surgical procedures for removing tumors of the upper jaw that date back to the ancient and middle ages.

These primitive operations were for the most part direct attacks on huge, far-advanced tumors and consisted of partly cutting, tearing, and scooping away the tumor. In some instances, a hot iron was used. All of

From the Section of Plastic Surgery and Laryngology (Drs. Devine and Figi), and the Section of Therapeutic Radiology (Dr. Scanlon), Mayo Clinic and Mayo Foundation. The Mayo Foundation is a part of the Graduate School of the University of Minnesota.

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these procedures were, however, different from what Fergusson [2] in 1848 chose to call the "modern" operation, complete resection of the upper jaw for malignant tumors. The so-called modern operation had its beginning in the early 1800's, and by 1830 surgeons everywhere were removing the greater part or all of the maxilla in treating tumors of this region. The operation usually consisted of exposing the maxilla with an external incision, of quickly sawing or chiseling through the bony attachments, and of then wrenching out the jaw with huge forceps. The whole operation was done in a few minutes without anesthesia. One of the original Fergusson incisions, which began at the corner of the mouth, traveled backward and upward, and ended somewhere in front of the ear, left an ugly scar, partly paralyzed the face, and sometimes inadvertently injured Stensen's duct. Gradually, this incision was abandoned for one more medial, so that by 1887 most surgeons were splitting the upper lip in the midline and going around the base of the nose and up the "nasofacial" groove. Some were making a horizontal incision from the upper extremity of this incision inside the lower eyelid.

In 1887, after the so-called modern operations for malignant tumors of the upper jaw had been performed for nearly 80 years, Butlin [4] summarized the results. He collected 108 cases from various sources. The total operative mortality was 30%. The most frequent causes of death were listed variously as collapse, shock, anemia, and exhaustion. Next came erysipelas, pyemia, and septicemia; then pulmonary complications; and lastly meningitis and abscess of the brain. The relief procured by means of the operation was slight, and Butlin said that, unless there was a reasonable hope of procuring better results in the future, the operation must be condemned. He also said this about total laryngectomy. During this era, Lister was born, and the Listerian techniques were then first being accepted. Pasteur and Koch were just beginning their discoveries, and Merke's ideas on steam sterilization were yet to come. The use of ether and nitrous oxide had just been introduced. The use of the intratracheal tube for greater safety during anesthesia was yet to come, as were the local anesthetic agents.

From 1900 to 1920, a change began to occur. The contributions of various authors to the literature indicate improved surgical treatment, decreased operative mortality, fewer wide-open resections, more operations done under the upper lip without external incisions, the use of local anesthesia, and the occasional use of intratracheal tubes or, more commonly, laryngotomy and tracheal intubation. Irradiation appeared on the scene, and this was rapidly followed by the use of electrosurgery.

### Three Main Types of Treatment

From 1920 to 1930, many contributions in the literature were from the advocates of the three main methods of treatment. As a spokesman for the radiologists, Douglas Quick [5] said in 1930, "From a curative standpoint operative surgery has rather little to offer." He explained this viewpoint partially on the basis that surgical principles can rarely be applied in these cases except perhaps in excision of the upper jaw for early growths without extensive bone invasion in the maxillary sinus. He also added:

> Unless a sufficient quantity of a proper type of radiation can be delivered accurately and uniformly to the tumor-bearing area, and unless the reaction to this treatment can go forward with a minimum of inflammatory complication, it is useless to employ irradiation with any hope of curative results. . . . Preliminary surgical exposure [and the] surgical cleaning out to facilitate drainage and at the same time to permit of access to the more inaccessible portion of the growth is essential, and is combined with heavily filtered radium.

As a spokesman for the electrosurgical enthusiasts, New [6] of the Mayo Clinic stated in 1935 that tumors of the antrum and upper jaw of a low grade of malignancy should be destroyed with surgical diathermy through the mouth or by lateral rhinotomy; the procedure used would depend on the situation of the tumor. In highly malignant lesions, however, he used surgical diathermy to gain access to the tumor for the application of radium and for purposes of drainage. He stressed that the operative mortality was practically zero. He selected for treatment by his method 54% of the patients whom he saw, and his rate of cure as reported in 1935 was 40% of the patients with primary malignant tumors of the antrum whom he treated. Holmgren, Berven, and Öhngren,[7] from Sweden, using similar methods, reported similar results except that their mortality rate was 11%. They partly explained this mortality rate on the basis of the fact that they operated on 79% of the patients they saw.

As a spokesman for so-called open operation with the use of knives, chisels, saws, and rongeurs and of postoperative radiation, Hautant,[8] in France, in 1931 reported two-year cures in 31% of his cases but an operative mortality of 11%. Pichler,[9] too, an advocate of sharp dissection, had a mortality rate of 11%. He obtained five-year cures in 11.5%. Pichler used postoperative irradiation in only 74 of 125 cases. Pichler and Hautant attacked New's statistics because he rejected 48% of the patients whom he saw. Pichler rejected only 17.6%, and Hautant's patients were unselected. In commenting on these various factors, Öhngren [1] said, "In any case New's statistics are, with regard to the postoperative mortality, superior to any other and his therapeutic technique is deserving of the greatest admiration."

As a result of these statistics, the method of attacking tumors of the upper jaw with electrosurgery and radium used postoperatively was in high favor, and in the decade after 1930 this method was used more than any other, as evidenced by the opinions of most of the eminent otolaryngologists in the United States recorded in transactions of the various societies published in the *Annals of Otology, Rhinology and Laryngology* and *Archives of Otolaryngology*. They emphasized the results obtained by New as a guide in selecting the method of treatment.

### Reasons for Use of Wide-Open Operation

One may ask why anyone should want to go back to the old wide-open operations and resections with knives, chisels, and saws when New had shown how superior his method was. There are several reasons. The first was well stated by Hilger and Kusske [10] when

they said, "The coagulation destruction of the main mass was a peculiarly unsatisfying surgical experience since there was no pretension to thorough removal. When to quit burning in the blind and bloody hole was a definition requiring a divine sense rather than a surgical one." This view may signify inexperience in the proper use of surgical diathermy, and it is not correct with regard to attempts at thorough removal of tumors of a low grade of malignancy, but there is some truth in it. The second reason is the prolonged morbidity associated with electrosurgery and radium. A long period of osteitis and sequestration, with foul odor, drainage, and much pain, follows such treatment. The third reason is the long delay in rehabilitation brought about by the inability of the patient to wear a satisfactory denture until the cavity is healed.

Early rehabilitation of the patient who has undergone radical treatment for cancer of the upper jaw is much to be desired. Nothing can be so demoralizing as a large hole in the roof of the mouth that communicates directly with the nasal and antral cavity. All the pioneer surgeons knew this. They used immediate prosthesis and maintained close working relationships with dentists. According to Scudder, Hahl [11] reported the methods of prosthesis employed in Berlin from 1887 to 1899 in a group of 81 resections of the upper jaw. The chief material used in the prosthesis was vulcanite rubber, which had been discovered by Goodyear in 1855. The cavity left postoperatively was permitted to granulate, to heal by scar epithelium, and to contract down around the appliance. This technique was used after the secret and successful operations for sarcoma of the upper jaw on President Grover Cleveland in 1893.[12]

During World War I, intraoral skin grafting was first performed. One of the first surgeons to use this technique in surgery of tumor of the upper jaw was Pichler,[9] who in 1931 described his method of immediate skin grafting of the cavity after resection of the upper jaw for malignant tumors in 125 patients. This technique hastens the period of convalescence, decreases scarring and contracture, and simplifies the postoperative treatment so that construction of a permanent prosthesis can begin two weeks or sooner after operation.

In the decade 1940 to 1949, radical surgery for cancer of the head and neck underwent rapid technical development, aided by the use of sulfonamides, antibiotics, blood banks, anesthesia induced with intravenously given thiopental sodium, and the dermatome for taking large uniform split-skin grafts. When radical surgical treatment became safer, the deterrents to the performance of complete open surgery of earlier days, namely, complications from shock, loss of blood, uncontrollable infection, and an extended morbidity due to failure of primary union, no longer existed.

### Our Present Methods of Surgical Treatment

Because of these factors, a definite trend now exists toward the use of the old wide-open operations and sharp resection for tumors of the upper jaw and antrum. Recognizing this trend and being aware of the changes that have brought it about, we at the Mayo Clinic are reverting more and more to what we call the old wide-open technique. Our principles of treatment remain the same as in the past, and they are essentially the same as those stated by Moffett [13] and Schuknecht,[14] namely, excise and destroy. In selected cases, we attempt complete excision of the tumor-bearing tissue by sharp dissection rather than by electrocoagulation, and we are following this with maximal irradiation.

The use of electrocoagulation is not, by any means, being abandoned. Despite the opinions of some who are inclined to scoff and criticize, it is a useful tool, and anyone who undertakes to treat cancer in this region should know how to use it fearlessly. Good results are still being reported by people who know how to use it. Larsson and Martensson,[15] from Karolinska Institue, Stockholm, in 1954 reported a five-year cure rate of 47% with the combined use of electrocoagulation and radiologic treatment. They rejected 57.5% of their patients as having inoperable lesions or lesions not suitable for this type of treatment.

### Radiation Therapy

Radiation therapy plays an integral role in the combined attack on malignant lesions of the paranasal sinuses and nasal cavity, and, on occasion, particularly with far-advanced malignant lesions, it is the chief and only method of treatment used. Like surgical treatment, radiotherapy has undergone refinements in technique and in methods of application in recent years, and today precision radiotherapy, tending more and more toward the use of high-dose techniques, calls for the utmost care and skill in the details of planning and the application of treatment. Although external roentgen therapy alone has been widely used over the years in the treatment of these lesions, it has not given as satisfactory results, except in a few hands, as has the combination of intracavitary use of radium and of external use of roentgen rays.

Because of the anatomic formation of the maxillary antrum, it is extremely difficult to achieve a homogeneous high-dose zone of irradiation around the tumor-bearing area, at least with roentgen therapy of conventional voltage and conventional cross-fire techniques. Although it is possible to achieve cure of antral malignant tumor with this technique, the risk of superficial overtreatment due to overlapping fields or, conversely, of undertreatment of more centrally located foci of residual malignancy is great. Consequently, we have reserved this technique for use on the far-advanced malignant lesions when palliative restraint of growth is the principal objective. It seems to us relatively impossible to treat ethmoidal or nasal malignant lesions with external radiotherapy alone, close as they are to the radiovulnerable eyes. For such lesions the supplemental intracavitary use of radium is essential.

The advent of supervoltage or cobalt teletherapy has modified our approach to these difficult problems and, for antral carcinoma at least, has allowed a simplified approach. With conventional roentgen therapy a minimum of three cross-fire fields are required, two homolateral and one contralateral; the homogeneous distribution of between 5,000 and 6,000 r in four to five weeks is extremely difficult to achieve and is at-

tended by considerable radiation morbidity, which often requires a month to a month and a half to heal after the course of radiotherapy is finished. At present, with cobalt teletherapy, the administration of a dose of 8,000 to 8,500 r in four to five weeks through a single anterior oblique field on the affected side will afford a dose of approximately 6,000 r to the posteromedial aspects of the antrum. This method of treatment is a relatively simple undertaking and is accompanied by much less radiation morbidity than conventional therapy. However, supervoltage therapy has not been employed long enough at the Mayo Clinic for us to assess its long-term results. In addition, we doubt whether, unit for unit, supervoltage therapy is as biologically effective as conventional therapy. Therefore, it is now our practice when supervoltage therapy is used to increase by a third the dose that we would have used if conventional therapy had been employed.

The intracavitary use of radium as the sole source of irradiation has been employed by some in the treatment of antral carcinoma with good results. However, we have felt that the rapid fall-off in dose from a single central source of radium is so great that the dose delivered 1 to 2 cm. beneath the surface of a tumor may well be below curative levels and that, in the event of a penetrating tumor, the results of therapy may be compromised unnecessarily. We, therefore, favor under ideal circumstances a combination of intracavitary use of radium and external roentgen therapy after the surgical procedure of choice has been performed.

Until recent years, access to an antral malignant lesion was obtained via a Caldwell-Luc incision, the lesion was thoroughly electrocoagulated, and two 50-mg. radium tubes filtered with 1 mm. of platinum were placed in direct apposition to the suspected foci of malignancy separated from the electrocoagulated base by 1 cm. or so of petrolatum gauze. This procedure was followed by the external administration of x-ray therapy to the tolerance level. This procedure theoretically afforded a dose from radium of approximately 3,000 r at the surface and less than 1,000 r at a depth of 1 cm. immediately adjacent to the radium tube.

The shortcomings of this method of topically applying radium can be appreciated when it is realized that this dosage is obtained only in the immediate vicinity of the tube and that the accurate positioning of these tubes through a relatively small Caldwell-Luc opening on an electrocoagulated base is a somewhat precarious procedure. Although this dose was supplemented by from 3,500 to 5,000 r from external roentgen therapy, the precision that is essential to high-dose radiotherapy was lacking and the risk of underdosing residual malignant tumors was great.

We now consider a more centrally positioned source of radium much better, as it increases the relative depth dose in the tissue and as it affords a more homogeneous coverage of the entire periphery of the antrum. Now after radical resection of the maxilla, often with intraoral grafting of skin, a mold that conforms to the operative defect is constructed to hold the source of radium. With a centrally positioned source of radium, an exact precalculated dose can be administered to all parts of the periphery of this mold. By this means a surface dose of from 4,000 to 5,000 r is delivered in two weeks more or less uniformly to all parts of the antrum. This is supplemented by a dose of from 4,000 to 5,000 r delivered by cobalt teletherapy over a period of four weeks. The essential homogeneity of dosage is thus more nearly achieved than with the old procedure. When the floor of the orbit is involved, and for some reason the surgeon has decided not to remove the eye, no attempt is made to shield the eye, since the 5 to 10% risk of late development of a cataract is not great enough to risk compromising the effectiveness of the entire program of treatment.

When the ethmoid sinus is involved, surgical removal or at least surgical access to the tumor is preferred, since our results in attempting to control these lesions with irradiation alone are poor. After exenteration of the tumor-bearing tissue supplemented with use of electrocoagulation, contact or topical radium tandems or plaques are employed, as many as necessary being used to cover the site of the malignant lesion. Here the advantages of radium at a distance cannot be employed due to anatomic considerations. The more superficial effect of topical application of radium is not so much a disadvantage in the ethmoid as in other sinuses, because malignant lesions at this site do not have such a decided tendency to infiltrate and because it is possible to employ much heavier though superficial doses in a relatively short time. We routinely employ surface doses of from 6,000 to 7,000 r in a single application lasting from three to four hours, and this amount is surprisingly well tolerated. This may or may not be supplemented by from 4,000 to 5,000 r delivered in a period of three weeks by cobalt teletherapy through a single direct nasal portal. Use of this supplemental procedure depends on the tendency of the malignant lesion to infiltrate and render the superficial action of radium impotent.

We are using radium tubes less frequently at the time of surgery chiefly because we are trying to get a healed cavity into which radium can be inserted on a mold. We are using electrocoagulation, radium needles, and radon seeds for areas in which it is difficult to remove the tumor, such as the pterygoid fossa. External irradiation is also used not only for the inoperable lesion but as the sole method of therapy for patients who have lymphoma and lymphoepithelioma.

## Comment

In reviewing the literature, we cannot escape the realization that cures figured on the basis of all patients with malignant tumors of the nose and paranasal sinuses rather than on those selected for treatment by a favored method are disappointingly few. For instance, at the Memorial Hospital in New York only 13% of "all comers" are cured for five years, as reported by Martin [16]; only 10% at the Los Angeles General Hospital as reported by Hara [17]; only 14% at the University Hospital in Ann Arbor, Mich., as reported by Cranmer [18]; and 23% at the Karolinska Institute in Stockholm, as reported by Larsson and Martensson.[13] This is a reflection of the insidious and silent growth of tumors in this region, so that when first discovered

they are far advanced. For the patient who harbors a malignant tumor in this region that causes symptoms early and thus receives vigorous combined surgical and radiologic treatment early, the outlook is surprisingly good.

200 First St. S. W. (Dr. Devine).

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# TREATMENT OF UNDESCENDED TESTES

**Col. James C. Kimbrough (MC), U. S. Army (ret.)†**
**and**
**Capt. Josiah F. Reed Jr. (MC), U. S. A. F.**

• *The testis may be retained extraperitoneally in the abdominal cavity, or its descent may be arrested in the inguinal canal, or there may be maldescent into the perineal, pubic, or femoral region. The purposes of surgical intervention are to preserve fertility, promote normal development, prevent injury, decrease danger of malignancy, lessen incidence of torsion of the spermatic cord, lessen incidence of strangulation of the associated hernia, and achieve a normal appearance. The procedure must preserve nerves, blood vessels, ductus deferens, and epididymis, must repair any existing hernia, and must prepare an adequate scrotal pocket. Incision and dissection must be such as to give adequate length of spermatic cord. The author recommends that a unilateral undescended testis, without evidence of large hernia, should be treated surgically when the boy is 4 to 6 years of age.*

This paper is concerned with the surgical management of undescended and maldescended testes. The complicated embryology and etiology, incidence, and pathology of undescended and maldescended testes, as well as theories regarding the cause of testicular descent, will be considered only to the extent that will enable one to understand the reasons for operation, the time for such treatment, and the results hoped for and obtained. It is desirable to treat the subject in a practicable manner and to avoid confusing the objective with the numerous and often conflicting theories and clichés.

## Types of Defects, Incidence, and Etiology

There are three types of developmental defects of the testes: (1) cryptorchism, the condition in which the testis is retained in the abdominal cavity extraperitoneally; (2) inguinal defect, the condition in which the testis is arrested in its descent in the inguinal canal; and (3) subinguinal defect, the condition in which there is maldescent of the testis into the femoral, perineal, pubic, or crural region.

Johnson,[1] in 1939, reported a 1.72% incidence of such developmental defects in boys examined for youth camps. In World War I, however, there had been an incidence of only 2 cases per 1,000 recruits, or 0.2%. Johnson therefore questioned why there was such a difference between the number of youths of boys'-camp age whom he had found with this defect and the number of grown men whom the armed forces had found with it. It is probable that the defect is not corrected spontaneously by time but that many youths with such a condition are never accepted by the armed forces. An undescended testis in the inguinal canal is subject to trauma and is a cause for rejection for military service. Thus, the treatment of a patient cannot be based on the comparison of two sets of statistics taken at different times that seem to show the spontaneous abatement of a disorder. Hinman[2] points out the inadvisability of ever basing individual treatment in urology on statistical data.

Consultant in Urology (Colonel Kimbrough), Walter Reed Medical Center, and Senior Resident in Urology (Captain Reed), Walter Reed Army Hospital, Washington, D. C.

Read before the Section on Urology at the 105th Annual Meeting of the American Medical Association, Chicago, June 12, 1956.

†Colonel Kimbrough died Aug. 19, 1956.

The embryologists confuse the process of testicular descent. They speak of (1) long testicular mesentery (mesorchium); (2) peritoneal adhesions; (3) plica vascularis; (4) short spermatic vessels (the vas deferens is never short); (5) large diameter of the testis; (6) long and inadequate gubernaculum testis; (7) cremasteric inadequacy; (8) maldevelopment of the inguinal canal; (9) scrotal maldevelopment; and (10) hormonal influence (Wells [3]). Hormonal deficiency may play a part in bilateral undescent, but it is intriguing to evaluate such deficiency in unilateral defects. In unilateral undescent it is apparent that there are local etiological factors in the inguinal canal and/or in the testis itself.

### Development of the Testis

The normal testis of the child undergoes distinct histological changes soon after birth, again when the child is 5 to 7 years of age, and again during his prepuberal, puberal, and postpuberal periods. After about nine weeks of gestation, the fetal testis has developed histologically to the point where it no longer changes qualitatively but quantitatively. Just before birth the seminiferous tubules are small and are filled with undifferentiated cells, which later give rise to the definitive germ cells and Sertoli cells. The interstitial tissue consists of many large interstitial cells with a reticulum network, fibroblasts, and a few collagen fibrils.

Within a few days after birth there are marked degenerative changes in the large interstitial cells and their nuclei. Cytoplasmic swelling, coarse granulation, diffuse fine vacuolation, and an increase in staining activity occur. The nuclei become pyknotic or undergo lysis, and only anuclear, granular cytoplasmic smudges are present. Many cells can be found that have a small amount of cytoplasm crowded with golden brown granules. This interstitial cell involution is usually complete by the fourth week of life. In some instances, recognizable interstitial cells have been seen until the child is 13 months of age.

During the first five years, the testis remains relatively dormant, with moderate increase in length and only slight increase in diameter by the tubules. The center of the tubule is occupied by degenerating germ cells, granular debris, and occasionally a substance resembling colloid. Interstitial cells cannot be found with ordinary staining techniques. After the fifth to seventh year, the seminiferous tubules start to show increasing tortuosity, with a gradual increase in cellular cytoplasm, nuclear size, and tubular diameter. The germ cells become more numerous in the tubules, with large binucleated and multinucleated forms appearing. As age increases, more tubules open and become more tortuous and a number of pale fusiform cells, which closely resemble normal interstitial cells, appear in the interstitial tissue.

At the time of puberty, spermatogonial development and mitotic activity have progressed to the point of producing recognizable spermatids. Many of these early spermatids die, but by the end of puberty spermatogenesis is firmly established. The process seems to be accomplished in successive waves of activity, with areas of sperm production and areas of rest alternating throughout the length of a tubule.

As the testis ages, gradual changes occur. There is a gradual reduction in spermatogenic activity and a thickening of the inner layers of the tunica propria of the tubule. The interstitial cell cytoplasm becomes more coarse and deeply eosinophilic; fine, golden-brown granules appear gradually in the interstitial cell cytoplasm and increase in number as the testis ages.[4]

### Histopathology of Undescended Testis

The histopathology of the undescended testis has long been debated with respect to prepuberal changes, the effects of hormonal and surgical treatment, and the efficacy of such therapy. For years numerous authors have expressed the opinion that there is no great histological difference between the normal prepuberal testis and the undescended prepuberal testis but that definite changes occur during and after puberty. This opinion has fostered the theory that hormonal therapy may be attempted in the prepuberal period, and, if such therapy is unsuccessful, surgery performed at puberty will achieve as satisfactory a fertility result as could be expected.[5]

Nelson [6] called attention to the fact that after the age of 5 or 6 years there were definite histological changes, consisting of a marked decrease in germinal elements in the undescended testis as compared with the normal testis of that age. Robinson and Engle [7] reported that after the age of 5 or 6 years there was a delay in growth of the tubule size in the undescended testis until puberty and that after puberty normal development is rare. They compared 42 testicular biopsy specimens, with each pair of specimens compared taken from the undescended testis and the normal testis in the same child.

Charny and co-workers [4b] concluded that there were no satisfactory surgical techniques for cryptorchism, as there was a definite tubular epithelial deterioration in the majority of the cases after orchiopexy. Sohval [8] reported on a series of 64 scrotal testes and 42 undescended testes. The ages of the patients studied varied from prematurity through puberty to adulthood. He concluded that there were definite histological differences (becoming more marked at puberty) in the undescended prepuberal testis, and degenerative changes were noted early in adult life.

The changes during the prepuberal period reported in undescended testes by these observers are minimal at first, becoming more apparent as puberty approaches. The rate of expansion in tubular size and maturation of germinal elements lags behind in the undescended testis. There is little alteration in development of the interstitial cells and tissue. During puberty, there are distinct histological differences. There is a moderate retardation of spermatogenesis, and early fibrosis of the tunica propria may be seen. Campbell [9] states that at puberty 90% of undescended testes are sterile. The interstitial cells and Sertoli cells are usually unaffected at this stage.

The postpuberal undescended testis, with some exceptions, shows more marked changes, which are often comparable with the changes of senility. There is marked degeneration or atrophy of the germinal epithelium. The tubular tunica propria and peritubular connective tissue show marked thickening and fibrosis. As the tubules become fibrotic, there is an apparent

increase in interstitial tissue and the interstitial cells become more prominent, with occasional slight hypertrophy. Hernia is almost always present; this makes the case surgical from the beginning. Congenital malformation of the inguinal canal is usually present; this also requires surgical correction. The spermatic vessels may be short; the vas deferens is never short. The epididymis is elongated and loosely attached to the testis; usually the undescended testis is atrophic. The endocrine function and interstitial-cell function are probably normal. Since spermatogenesis is usually absent, the testis is usually infertile.

## Need for and Methods of Treatment

The clinical symptoms noticed by the patient himself are inconsequential. The parents notice the defect early and become greatly concerned. It is usually the mother who becomes anxious, especially if the child has bilateral cryptorchism. Early, there may be the appearance of signs of feminism and other evidence of deficiency of male hormones, particularly in cases of bilateral defect. Later, after he reaches school age, the patient may notice, when he begins to share lavatory facilities in public places,[1] that he is not like the others. In case of torsion of the spermatic cord or strangulated hernia, the symptoms of the disorder are manifested.

The diagnosis offers very little difficulty. The physical examination consists of a careful palpation of the scrotum and the inguinal canal. History of trauma is important. The physician must watch for signs of feminism, absence of male characteristics, enlarged breasts, pubic adiposity, microgenitalism, and any other evidence of endocrine disturbance. He must observe the location of the testis, whether it is in the inguinal canal or absent. It is important to look for epididymitis, hernia, appendicitis, torsion of the cord, and neoplasm. If the patient is obese, it may be impossible to palpate a small testis in the canal. Penile, perineal, scrotal, and pubic testes present little difficulty in detection.

*Dangers Inherent in Cryptorchism.*—The loose attachment of the epididymis to the undescended testis increases the incidence of torsion. The undescended testis lying in the inguinal canal is subject to trauma to such an extent that a person with this condition is disqualified for military service. There is also always the danger of strangulation of the associated hernia.

The statistics regarding the incidence of malignancy in undescended testes are inaccurate and confusing. They are usually based on observations made by only one physician. These observations eventually become opinions; when repeated often enough, they become "data" and finally "statistics." It is usually estimated that the incidence of malignancy in the undescended testis is 20 to 60 times greater than that in the normal testis.[10] These observations, opinions, data, and statistics indicate that, whatever the actual incidence of malignancy, it is many times that in the normal testis.

*Objective of and Reasons for Treatment.*—The objective of treatment is to bring the testis into the normal position in the scrotum at the earliest practicable time and with minimum damage to the testis and adjacent structures. The reasons for bringing the testis into the scrotum as early as possible are as follows: (1) to preserve fertility; (2) to promote normal development; (3) to prevent injury; (4) to decrease the incidence of malignancy or to make early recognition of such a condition possible; (5) to lessen the incidence of torsion of the spermatic cord; (6) to lessen the incidence of strangulation of the associated hernia; and (7) to achieve cosmetic effect.

It is believed that the endocrine function of the interstitial cells suffers little harm from the increased heat of the undescended testis. Spermatogenesis will not develop without the thermoregulation in the scrotal position.[3]

*Methods of Treatment.*—The methods of treatment may be considered under three divisions. First there is watchful waiting. This no-treatment type of treatment may be carried out in cases of unilateral undescended testis until the child's 6th year. Cases of bilateral defects should not be observed more than three years. Perineal, femoral, crural, and pubic placement of testes should be corrected when the child is 1 to 2 years of age.

The second form of treatment is medical. This consists of the administration of androgens, therapy with chorionic gonadotropin, and replacement therapy with testosterone. In recent years the enthusiasm for the use of stimulating hormones, such as the gonadotropic hormones, has waned almost to the vanishing point. Such hormone therapy should never be used routinely or over long periods. If there is evidence of testicular hormone deficiency, such as obesity, signs of feminism, or enlarged breasts, gonadotropic hormones may be used. Such therapy produces good general effect but rarely causes testicular descent. Chorionic gonadotropin may be given in doses of 250 units two or three times weekly for three or four weeks. If good results are not obtained in this time, its use should be discontinued. The postoperative use of hormone therapy is of doubtful value. Replacement therapy with testosterone is never indicated. It will cause increase in the size of the penis and scrotum, but it does not effect testicular descent.

The third type of treatment is surgical. This is the essential treatment for undescended testes and should be performed early. After a fair trial, neither watchful waiting nor medical treatment should be depended on in the hope of avoiding operation.

## Surgery

*Time of and Criteria for Operation.*—It has been determined that the undescended testis develops normally and is identical in structure with the normally placed organ until the fifth or sixth year. Development is arrested at the fifth year, and in some patients regression may occur after that time. These changes in pathology and function make early operation imperative. It is desirable to complete the surgical treatment before the child reaches school age. A unilateral undescended testis, without evidence of large hernia, should be treated surgically when the child is 4 to 6 years of age. The treatment should be begun earlier in bilateral disorder, when the child is 3 to 4 years of age.

When a large hernia is present, early operation is indicated, for the patient is subject to the dangers of strangulation of the hernia and torsion of the cord. Since there is little likelihood of spontaneous recovery, the operation should be performed when the child is

2 to 4 years of age. We have performed such operations when the child was one year old. The results were good, and recovery uneventful. When the testis is perineal, pubic, crural, or penile, it is subject to trauma, and spontaneous recovery rarely occurs. Surgical treatment should be given without delay.

The fundamental objectives of surgical treatment are to (1) preserve nerves, blood vessels, and the integrity of the vas deferens and epididymis; (2) remove a sufficient amount of fibrous tissue and peritoneal process from the cord to obtain adequate length; (3) carry out satisfactory hernia repair; (4) prepare an adequate scrotal pocket; and (5) place and retain the testis freely at the bottom of the scrotum without undue traction on the spermatic vessels.[2]

*Review of Procedures.*—Since Hunter's [11] classic description of the anatomy and physiology of the descent of the testis in 1786, various attempts at operative correction have been made. The modern surgical approach to this anomaly was described by Arthur Dean Bevan in 1899. Since surgeons experienced some difficulty in understanding the technique, he published a more elucidative article in 1903.[12] The basic principles described are so explicit and complete that little improvement has been made in the concept of the operation since that time. The one important addition has been the fixation of the testis to the deep fascia of the thigh. This added operative technique was contributed by Torek,[13] Wangensteen,[14] and McKenna.

Bevan retained the testis in the scrotum by a purse-string suture at the neck of the scrotum. Ombredanne placed the organ in the opposite side of the scrotum through an incision in the septum. Cabot and Nesbit [15] used sutures and elastic bands fixed to the thigh to accomplish this purpose, and Abrahamson used a flap of the fascia of the thigh.

Torek [13] and Wangensteen [14] fixed the tunica albuginea testis to the deep fascia of the thigh, and McKenna fixed the gubernaculum testis to this fascia to hold the organ in place after the operation. Lewis [16] further improved the operation by extending the incision well above the internal inguinal ring, incising the internal oblique and transversalis muscles, giving wide retroperitoneal exposure of the spermatic vessels, and placing these vessels internal to the deep epigastric vessels as advocated by Wangensteen and others. All these authors emphasize the importance of adequate exposure of the spermatic vessels.

Our operative procedure is based on the principles of Bevan,[12] Torek,[13] Wangensteen,[14] and Lewis.[16] The ideas have been taken chiefly from Lewis, Prentiss, and Mullenix and developed with their cooperation. The McKenna principle of fixing the gubernaculum testis to the fascia of the thigh has been used satisfactorily in cases of very short spermatic vessels. The gubernaculum testis has a tendency to stretch (elongate), permitting the testis to take a position too high in the scrotum. All the authors emphasize the importance of a long incision giving adequate exposure of the cord, testis, and the internal inguinal ring. Other methods, such as fixation to scrotum, elastic traction, and sutures to skin of thigh, have proved unsatisfactory in many patients.

*Technique.*—The incision through the skin, superficial fascia, and the aponeurosis of the external oblique muscle is made, beginning at the spine of the pubis and extending 5 cm. above the internal inguinal ring. The incision exposes the inguinal canal and internal ring. It must be large enough to expose, without trauma, the testis, spermatic vessels, and internal ring. The testis is exposed; the spermatic cord is isolated to the internal ring; the gubernaculum testis is divided; and the peritoneal process and fibrous tissue are removed from the cord. All the blood vessels, lymphatics, and nerves and the vas deferens are retained. The internal oblique and transversalis muscles and their aponeuroses are divided 5 cm. above the internal ring, and retroperitoneal exposure of the spermatic cord is done. The peritoneal process is separated from the spermatic vessels and vas deferens and either ligated by a purse-string suture or closed by sutures at the neck.

The retroperitoneal exposure of the spermatic vessels gives greater length to the cord. The vas deferens is always adequate in length. There is often some difficulty in separating the peritoneum from the cord. Bevan advised injecting sterile water beneath the thin membrane to facilitate separation. Occasionally the peritoneal process is obliterated to some extent, and a definite hernial sac is not found. The peritoneal process should be removed to prevent the development of hernia at a later time.

The deep epigastric vessels at the internal ring may be preserved. In order to obtain a shorter route for the cord, a canal may be made internal to (beneath) these vessels and the cord placed therein. This procedure is valuable if the spermatic vessels are very short. The inferior or deep epigastric artery anastomoses with the superior epigastric or the internal mammary artery and with the lower intercostal arteries. Because of this anastomosis, the division, or ligation, of this artery does not interfere with the blood supply of any important structure; therefore, the vessel can be sacrificed without harm. The division of this artery permits the spermatic vessels to take position in a straight course from the abdominal vessels to the scrotum, thus eliminating the spermatic triangle described by Prentiss and Mullenix.

The testis and cord having been exposed and the proper length of the cord attained, the next step of the operation is the preparation of the scrotum. The scrotal pocket is enlarged by inserting two fingers through the neck of the scrotum at the lower end of the inguinal incision. An oblique incision 2.5 cm. in length is made at the dependent portion of the scrotum, with the internal and inferior end of this incision ending at the median raphe. The incision may be made over the fingers or gauze placed in the pocket. A Penrose drain is placed through the incision and brought out above in the inguinal incision, so that ready access to the scrotal cavity is maintained. A corresponding incision is made on the inner aspect of the thigh, exposing the deep fascia. The inferior margin of the scrotal incision is approximated to the superior margin of the thigh incision by chromic absorbable surgical sutures that are subcuticular. Three sutures are placed through the

dependent margin of the tunica albuginea testis, and the free ends are maintained separately. A hemostat is introduced from below, upward through the incision in the scrotum. The suture is grasped and pulled through the scrotum, thus bringing the testis out through the scrotal incision. The testis is fixed to the fascia of the thigh. The closure of the scrotal-thigh incision is completed.

The inguinal incision is closed, by the Ferguson method, with two layers of sutures. The cord is not transplanted but lies free in the depth of the canal. The Bevan purse-string suture may be placed at the neck of the scrotum. The superficial fascia is closed, and a piece of petrolatum-saturated gauze is placed in the canal between the thigh and the scrotum. The operation is complete. The suture material used is optional, except for the closing of the posterior margin of the scrotal incision. Silk, cotton, or 00 chromic absorbable surgical suture may be used.

The second stage of the operation, that is, the removal of the testis from the thigh, must be accomplished with great care in order to preserve intact the blood supply and parenchyma of the organ. The testis can be removed from the thigh by incision at the site of union of scrotal integument and the thigh and by the separation, by blunt and sharp dissection, of the tunica albuginea from the fascia. With care, a thin fascial covering of the tunica albuginea can be preserved. Particular care must be taken in this supposedly minor operation, because a few cases have been observed in which the cord was divided and the testis left embedded in the subcutaneous tissue of the thigh.

In surgery for the treatment of bilateral undescended testes, the testis on one side is fixed to the thigh at the first operation. That on the opposite side may be fixed three months after the first operation. Usually it is desirable to do the first-stage procedure on the other side at the time the second-stage procedure is done on the first side treated.

In cases of bilateral undescended testes in which the spermatic vessels are so short that neither testis can be placed in the scrotum, it is advisable to leave the testes in the abdomen or canal in order that the internal secretion may be preserved. Orchiectomy is indicated in cases of unilateral defect in which the spermatic vessels are too short to allow the testis to be placed in the scrotum in satisfactory manner. With one normal testis in the scrotum, it is better to remove the undescended testis that cannot be placed in the scrotum rather than leave it in the canal or abdomen, where it is subject to the risk of trauma and/or malignant changes. Some competent surgeons have advocated division of the spermatic vessels; however, such procedure is almost always followed by atrophy of the testis.

*Postoperative Care.*—The thighs are fixed to each other by bandage and elevated for two or three days. The usual postoperative care for hernia repair is carried out. Hormone therapy has little value, unless the need for it is definitely indicated.

As has been mentioned, the epididymis of the undescended testis is usually attached loosely to the testis by a long rete. Since congenital anomalies of duplicated organs tend to occur bilaterally, it is possible that the opposite testis in unilateral defects may also present such pathology. This condition increases the tendency to torsion of the spermatic cord. Because of this, it is advisable to examine the normal testis and perform adequate fixation if the organ is loosely attached to the epididymis.

## Results

The results of treatment depend to a great extent on the degree of defect prior to treatment, medical or surgical, and the age at which operation is performed. If there is considerable atrophy prior to treatment, normal development will rarely be obtained. Fertility will rarely be achieved in bilateral undescended testes; however, some cases have been reported. Again the presence of fertility depends on the degree of atrophy of the testis and the condition of the epididymal attachment prior to surgery.

## Summary

The treatment of the undescended testis is essentially surgical. The results obtained depend on the degree of preoperative atrophy of the testis, the condition of the epididymis, the age at which operation is performed, and the efficiency of the operative procedure.

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# TREATMENT OF CRYPTORCHISM

Carl B. Drake, M.D., St. Paul

• *Follow-up in cases of bilateral cryptorchism has shown that descent at least as late as the 14th year is consistent with fertility. There is little evidence that testes descending spontaneously by age 15 have undergone damage. The frequency of undescended testis is much greater in younger than in older boys. This confirms the conclusion, based on observation of descent of testis in many individual cases, that spontaneous descent occurs frequently in the 11th, 12th, 13th, and 14th years and that an appreciable number of testes descend in the 15th year. Endocrine therapy before puberty is of questionable value, and overdosage in a mechanically retained testis produces irreversible atrophy. Consideration of published surgical data shows that a boy with bilateral nondescent has a much better chance of ultimately having children if late spontaneous descent is allowed to take place and surgery is deferred until the 16th or 17th year.*

The proper treatment of cryptorchism is still controversial. Having been interested in the subject for some years, I turned recently to what the volume on therapeutics of "Oxford Loose-Leaf Medicine" had to say on the subject. In brief, this article recommends the commencement of treatment at approximately the age of 8, with intramuscular injections of chorionic gonadotropin three times a week for eight weeks, a rest period of a month, and, if success has not been attained by that time, a repetition of the eight weeks' course of injections. If the testis or testes have not descended by that time, surgery is advised. Could this be the consensus as expressed in recent medical literature? After a perusal of much of the medical literature on the subject that has appeared in the past two decades, I found that many of the articles, probably the majority, express essentially the same opinion: endocrine injections early and, if these fail, surgery. This opinion is, however, by no means unanimous.

In 1934, I published the results of my observation of 11 school boys with undescended testes (one with bilateral defect) encountered in the routine examination of some 260 boys ranging in age from 9 to 19.[1] In none of these boys was the testis concerned palpable in the scrotum or in the inguinal canal on repeated examinations. I reported that 10 of the undescended testes descended spontaneously during the period of observation: one in the 10th year, two each in the 11th, 12th, 13th, and 14th years, and one in the 16th year. After the time of publication of the article, one more testis became palpable at the external inguinal ring when the boy was 14, and by his 17th year it had lodged in the midscrotal region and was normal in size and consistency. So the final result in my small series was 11 of the 12 undescended testes spontaneously descending and all normal in size, consistency, and low scrotal position except two that were definitely smaller than normal and the one mentioned that was lodged in the midscrotal region.

In the case of bilateral cryptorchism the right testis descended during the boy's 14th year and was normal in size, position, and consistency; the left descended in his 16th year and was one of the two testes in the series showing atrophy. This boy has since married and is the father of four children. One of the boys whose right testis did not descend until he was 11 years old had an associated left-sided inguinal hernia (the only hernia present in the series), although the left testis had not been delayed in its descent. He was operated on for his left-sided hernia after the right testis had descended spontaneously, and on examination after the operation the left testis could not be located. It had either been removed or been reposited within the abdominal cavity. In either event it was fortunate that the right testis had spontaneously descended when it did. This boy has also become a father, which speaks well for the fertility of the spontaneously descended right testis.

The accuracy of the diagnosis of cryptorchism in my small series has been questioned in several articles[2] that have appeared since 1934. If physiological retraction of the testis can make it retract so far that it can be felt neither in the scrotum nor at the external inguinal ring by the examining finger invaginating the scrotum, nor in the inguinal canal, then the criticism that such cases are included in my series may be justified. All the boys received yearly examinations, however, and, although hot packs were not used as recommended by Hamilton, I was, of course, cognizant of the condition described as physiological retraction or pseudo-cryptorchism and feel reasonably sure such cases were not included in my series. One author[2e] argues that the high incidence of undescended testis in my series (4.2%) compared to the finding of only two or three per thousand (0.2 to 0.3%) in army recruits proved that some of my cases were pseudo-cryptorchism and that spontaneous descent could be expected in such cases. To me, the marked difference in the incidence is confirmatory evidence that most undescended testes descend spontaneously by the time adult age is reached.

I am not alone in reporting the incidence of cryptorchism as much higher in adolescence than in adulthood. Coley,[3] in 1908, in regard to the recommendation advanced by some to operate on patients with undescended testes at the age of 2, stated:

> Such practice ignores the fact that in a large proportion of cases of undescended testis in young children, the organ will reach the scrotum by the age of puberty without surgical interference. Of 739 cases of undescended testis observed at the

Emeritus Clinical Professor of Medicine, University of Minnesota Medical School, Minneapolis.

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hospital for Ruptured and Crippled since 1890, 561 occurred in 18,410 children under the age of 14, or 3 per cent; while only 92 cases occurred in 3,848 between the ages of 14 and 21 years, or 2.2 per cent; and only 75 cases in 37,370 over 20 years of age, or 0.2 per cent. That is, under the age of 14 years undescended testis is 15 times more frequent than after the age of 21 years. Inasmuch as only comparatively few cases have been cured by operation during this period, the only conclusion is that the majority of undescended testes seen in infancy and early childhood eventually reach the scrotum through natural causes before the age of 14 years.

Prompted by the report of my small series, Johnson [4] took advantage of his opportunity to observe the incidence and course of undescended testes encountered in the routine examination in New York of 31,609 boys in adolescent years. He found 544 cases (1.7%), with spontaneous descent occurring in 313 instances and normal size, consistency, and position in 300 of the 313. Some 154 boys were lost to follow-up, and there was no follow-up in 63 cases. He also reported that spontaneous descent occurred most often in the 11th, 12th, 13th, and 14th years and an appreciable number in the 15th year. It is unfortunate that so many of the boys were lost to follow-up before they reached adulthood.

Apropos of the incidence of undescended testes and the ages at which they spontaneously descend, McCutcheon [5] reported, in 1938, the finding of 192 undescended testes in 2,131 boys under the age of 15 (9%) and only 12 in 1,066 boys over 15 (1.1%). In 74% of the boys under the age of 15 with undescended testis, the testis descended spontaneously during the period of observation, and eight descended during the 15th and two in the 16th years. The remaining 49 that had failed to descend were in boys under 15 years of age, and the author believed the majority of these would also descend spontaneously. Hinman states that about 1 in every 25 or 30 boys under 14 years of age has an undescended testis (3 or 4%) and that about 1 in every 250 men over 21 (0.4%) has the condition.

The above-mentioned authors may conceivably have included boys with pseudo-cryptorchism in their series, but who can say that surgeons have not done the same and operated on them unnecessarily?

### Determination of Proper Treatment

The determination of the proper treatment for boys with unilateral undescended testis is not so important as in the case of those with bilateral defect. I am considering, of course, the treatment of undescended testis in a boy without signs of other glandular disturbances. In the case of unilateral cryptorchism, one testis has descended normally and is presumably going to be able, if it is not already able, to supply sufficient hormonal secretion to produce secondary sex changes at puberty and a sufficient number of spermatozoa to assure fertility. Boys with unilateral cryptorchism are not different from those having a normal descent as far as physical or mental make-up is concerned. Cosmetic or psychological considerations, or the fact that malignancy is likely to occur more often in an undescended testis, are not compelling reasons for active treatment.

When, however, both testes are undescended and are intra-abdominal in location, the question of the proper treatment is vital. If this condition persists, it is generally conceded that sterility will result, although a rare case of fertility has been reported. The all-important question is what course of treatment is most likely to result in at least one testis of normal size and consistency assuming its normal position low in the scrotal sac. In other words, will endocrine treatment and/or operation be more likely to accomplish the desired result than relying on nature for a spontaneous descent?

### Hormone Therapy

How effective are injections of hormones in bringing about late descent of the testes, and are there any undesirable effects of such treatment? Lapin and co-workers [2b] reported complete success in 15.3% of 39 boys so treated and followed over a period of two to nine years. Only 39 of the 250 boys treated with hormones are included in the report. Hamm and Harlin [2a] state that descent occasionally occurs after the use of chorionic gonadotropin. Deming states that chorionic gonadotropin in doses of 250 I. U. three times weekly for 12 doses will cause full descent in 5% of 5-year-old boys.

To refer to Lapin and co-workers [2b] again, their tabulated results showed a poorer response in boys 8 years of age and under and those 12 years of age and over than in the 9 to 11 age group. He also reported that in 4 of the 39 cases reported there were definite signs of hypogonadism after treatment, whereas the 4 boys had had normal body configurations before treatment. This aroused the suspicion in his mind that the endocrine treatment had caused the change. One of the four had received chorionic gonadotropin alone and two had received chorionic gonadotropin and testosterone propionate. Only 2 of the 200 receiving hormones developed pubertas precox, a result that it is generally agreed should be avoided.

Eisenstaedt states that an overdosage of hormones will produce atrophic changes that are irreversible in a mechanically retained testis. He agrees with Rieser that glandular therapy before puberty is of questionable value and after puberty is not necessary. Rea [6] reported that 6 of 36 patients (16%) treated with gonadotropic substance showed degrees of testicular descent.

Lewis [7] states that anterior-pituitary-like substance has very little effect on a child 8 years of age or under but in those 8 to 12 years of age brings an increase in the size of the external genitals, growth of pubic hair, changes in distribution of fat, changes in voice, and also psychological alterations. He cites data from Thompson and Heckel, who in 1939 found only 20% of 860 undescended testes benefited by hormone therapy, which was much less than the 61% reported in the literature. Lewis states that since 80 to 90% of undescended testes descend under the influence of sex hormones appearing at puberty, it does not seem logical to operate at an early age. He goes on to advocate, however, the use of chorionic gonadotropin in a dosage of 500 rat units three times weekly for a total of 30,000

units one to two years before puberty is expected. Such treatment would not allow for the spontaneous descent that he says will occur during puberty in 80 to 90% of cases; thus such recommendation seems illogical.

Moore states: "We find that injections with gonadal hormones enlarges the testicle but does not bring it down in the true cryptorchid." Chastain[8] found 27 of 1,301 Indian boys (2.08%) with undescended testes, the defect being bilateral in 5. He reported excellent results from injections of chorionic gonadotropin in 9 of the 27 boys. He remarks, however, that it is generally agreed that testes that descend after hormonal therapy would have descended spontaneously at puberty.

### Surgery

Howard[9] concludes that "unilateral cryptorchidism offers no significant chance of success from treatment other than surgery." Let us consider what surgery has to offer in the treatment of cryptorchism. Success may be claimed for an operation if the eventual result is a testis of normal size and consistency lying low in the scrotum. In the case of bilateral defect, eventual fertility as evidenced by the ability to beget children could be accepted as proof of success, whereas the lack of children could not be taken as absolute proof of surgical failure. The demonstration of spermatozoa in sufficient number in the semen should likewise be evidence of success.

MacCollum,[10] in 1935, reported that in 11 of 18 cases of bilateral cryptorchism fertility resulted after operation. In 5 of 53 cases of unilateral defect the blood supply was interfered with and the testis became atrophied. In the remaining 48 cases of unilateral defect, 35 testes remained in the scrotum after operation while 13 retracted into the inguinal canal and showed some atrophy. In 17 of the 35 that remained in the scrotum there was partial atrophy.

Koop[11] states, "In general the results of the surgical treatment of non-palpable testes is poor." He feels that the suture fixation of a testis is most likely to result in an atrophic testis. Browne[12] states that the results of surgery for undescended testes are far from satisfactory.

Wangensteen[13] states that biopsy of the testis done after the Torek operation, at the time that the cutaneous union between scrotum and thigh was severed, showed some improvement in the state of the germinal epithelium; however, it never showed that the normal adult state had been attained. He also states that the reason the testis after orchiopexy does not produce spermatozoa with the same profusion as a normal one is not apparent. He reports the result of the Torek operation performed on 14 males with undescended testes, the defects in 9 being bilateral. Only four of the nine boys with bilateral cryptorchism were 16 years of age or younger. The remaining five were 18 to 29 years of age. After bilateral orchiopexy on an 11-year-old, only 3 to 4 sperm were found in the semen per high-power field six years later and the testes were two-thirds normal size. In the 14-year-old, the testes were half the normal size and sperm cells were scarce five years later. In the 15-year-old, only the right side was operated on, and the position was excellent, the size was about adult, and sufficient number of sperm cells were present. In the 16-year-old, the position of the testes was excellent, the size was about two-thirds adult size, and the presence of sperm cells was not demonstrated. Of the group of five over the age of 18, in two the operation had not been completed, in the third and fourth the testes were two-thirds adult size and no sperm were found, and in the fifth the testes were two-thirds adult size and sperm were present (number not stated). Wangensteen nevertheless feels that a good scrotal anchorage performed just before puberty and without damage to the blood supply affords the best promise of normal development.

Hansen,[14] in reporting the results of 30 bilateral operations, found on checking 25 of the 30 patients that 14 were sterile and 9 more showed more or less impairment of fertility. Summing up his experience, he found that aspermia, that is, sterility, was demonstrated in most cases of operatively treated bilateral cryptorchism. He further states: "Thus the examination of patients treated with unilateral orchiopexy points in the same direction as the investigations of patients with bilateral cryptorchism, namely that by means of the operation we do not succeed in making the operated testis produce any significant amount of spermatozoa." And further in speaking of bilateral cryptorchism, Hansen says: "I have no doubt that the only chance of fertility for these patients depends on the possibility that the testis will make a spontaneous descent to the scrotum before puberty is reached."

The report of Hamm and Harlin[2a] is rather difficult to evaluate. In the period from 1942 to 1952 at the Brooklyn Hospital, operation was done in 42 patients, including 9 with bilateral defect. They report that in 28 of 34 cases in which the testis was brought down the result was entirely satisfactory. In five instances orchiectomy was performed.

Rea[9] states that the undescended testis after orchiopexy probably never attains the full functional capacity of the normally descended organ so far as the production of spermatozoa is concerned. When Rea reports that at the University of Minnesota Hospitals no complete spontaneous descent has been noted in a series of 100 imperfectly descended testes in patients 2 to 79 years of age, one can only conclude that most of the patients were over the age of 17 and that those under 17 could not have been observed very long but must have received prompt operation. To state as Rea does that the true undescended testis never spontaneously descends and that those that do are cases of pseudo-cryptorchism is not in keeping with the difference between cryptorchism and pseudo-cryptorchism as understood by authors in general. Nor is it possible for any examiner to designate in which cases spontaneous descent will or will not occur.

Gross and Jewett[15] have recently reported the results of their experiences from 1,222 operations for undescended testis performed at the Children's Hospital in Boston, indicating that these operations are still being performed. They believe the best time for operation is when the patient is between the ages of 9 and 11, before the onset of puberty. They believe the Torek operation results too often in a damage to the blood supply to the testis, with resulting atrophy and failure of spermatogenesis. The operation they have adopted consists of freeing the vas deferens to the

base of the bladder and the spermatic vessels to the lower pole of the kidney. The testis is placed in the scrotum and traction exerted on it by means of an elastic band attached to a suture leading through the scrotum to the testis. This mild traction is maintained for a few days. This type of operation has been used by them for several decades, and in 38 men with bilateral nondescent they report an acceptable fertility of 79% 10 years or more after operation.

This report by Gross and Jewett of "acceptable fertility" of 79% after operations for bilateral nondescent is the best result encountered in the literature. It is doubtful whether other surgeons with less experience in this field could anywhere near match this figure of 79% fertility. A physician might well hesitate to recommend such an extensive operation even in the hands of experts if he knew that his young patient would have at least as good and perhaps a better chance of a spontaneous descent and fertility if nature were allowed to follow its course.

A coexisting inguinal hernia may well be an indication for operation, although in a considerable percentage of cases of hernia the wearing of a truss is curative. In spite of statements that undescended testes are commonly associated with hernia, McCutcheon[5] states that in only 4 of 204 cases of cryptorchism observed by him was hernia present. He states further that the sequential relationship between delayed descent of testes and inguinal hernia is not proved and the weight of evidence is against such a relationship.

In determining the proper course to pursue in the case of bilateral cryptorchism, the statement by McCutcheon[5] that he had not encountered a single case of bilateral defect in the examination of 5,000 boys over the age of 15 is suggestive.

## Spontaneous Descent

The surgeon who hesitates to operate on these boys before they reach puberty can derive considerable reassurance for his decision to wait until after the boy reaches the age of 15 from Wilkin's statement that "certainly there is little evidence that testes which have remained intraabdominal until late childhood or adolescence and then have descended spontaneously have undergone damage."

The recording and analysis of spontaneous late descent of testes in a large series of cases of unilateral and particularly bilateral cryptorchism by Johnson[4] indicates that a boy with bilateral undescended testes has in all probability a better than 79% chance of fertile descended testes if he is left absolutely alone. In his series, late spontaneous descent occurred, and all the testes were normal in size, consistency, and position, in 162 of 236 cases of bilateral defect (68.6%). It is logical to conclude that these testes were normal from the standpoint of fertility. Most of the 74 cases of bilateral defect in which descent was not found at the time of the last examination were in boys in the age group 7-13 inclusive, the period when late descent is most likely to occur. It therefore can be safely assumed that the great majority of these 74, who were lost to follow-up before they reached manhood, would have shown a late descent also and that this would have raised the percentage of normal descended testes much above 68.6%. Johnson made a contribution to the subject of the treatment of undescended testes that has not received the attention it deserves. He stated as follows:

> So far as surgical intervention is concerned, it is time to reconstruct all the old ideas. If operations "before 11" had been carried out in this [his] group of cases, 232 useless and detrimental procedures would have been performed. These figures show that operation before the sixteenth year would have been a definite mistake in most instances. Tables 3 and 4 show that after the fifteenth year there were still sixteen cases of nondescent, and in seven of these descent occurred spontaneously. I would suggest a new tenet. "Do not operate for undescended testis before the sixteenth year unless operation is indicated by some associated condition."

## Conclusions

The boy with unilateral cryptorchism has a much better chance of having two testes normal in size, consistency, and position if nature is allowed to take its course and surgical treatment is avoided until his 16th year. The question of the best treatment for bilateral nondescent is vital. The boy with this condition also has a much better chance of eventually having normally functioning testes if late spontaneous descent is allowed to take place and surgical interference is deferred until the 16th or 17th year. There is no question in my mind but that the results of most operations that have been performed to correct bilateral nondescent of the testes actually have unintentionally produced what they have been performed to prevent—that is, sterility.

1235 Lowry Medical Arts Bldg. (2).

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# ANTIFOAM AGENTS IN PULMONARY EDEMA

Reuben C. Balagot, M.D., Rosauro M. Reyes, M.D.
and
Max S. Sadove, M.D., Chicago

• *The presence of frothy edema fluid in the alveoli of the lung hinders the diffusion of oxygen upon which the cells of the respiratory epithelium normally depend for their own oxygenation. This sets up a vicious circle, because the anoxic epithelium becomes more permeable and so permits further passage of fluid. The possibility of breaking this vicious circle by using antifoam agents was studied in rabbits after inducing pulmonary edema by intravenously injected epinephrine. Various antifoam agents were administered in a special chamber containing the experimental animals. Of the six agents tried, the most effective was a mixture containing a silicone and a polyhydric alcohol; it compared favorably witht 95% ethyl alcohol in animals. It was therefore administered to eight patients with pulmonary edema by inhalation, with the aid of a respiratory apparatus affording intermittent positive pressure.*

Three factors influence the dynamics of the migration of fluids from the vascular tree across the alveolocapillary barrier into the alveolar spaces. These are (1) pulmonary capillary pressure, (2) osmotic pressure of plasma proteins, and (3) permeability of the capillary wall. Under normal conditions, pulmonary capillary pressure has been stated to be approximately 10 mm. Hg. This force would tend to push fluid across the capillary wall into the alveolar area. In opposition to it is the osmotic pressure of the plasma proteins, stated to be approximately 25 to 30 mm. Hg, which prevents fluids from crossing the capillary barrier. Abnormal conditions may supervene and interfere with this state of balance between these two forces. For instance, pulmonary capillary pressure may increase considerably in cardiovascular conditions, even to a point where it exceeds osmotic pressure, and yet edema may not occur. Actual measurements of 25 to 50 mm. Hg have been made before edema developed, especially in persons with mitral valvular diseases. On the other hand, with normal pulmonary capillary pressures, the osmotic pressure may diminish so that its ability to maintain an effective opposing force to the pulmonary capillary pressure decreases. Examples of this condition may be observed when there has been starvation with a concomitant hypoproteinemia, prolonged and excessive infusions of saline solution, or extensive liver diseases where the serum protein level may again diminish.

The third important factor is the permeability of the pulmonary capillary wall. Under normal conditions, the capillary wall is relatively impermeable to the passage of fluid from the blood stream into the alveolar spaces. The permeability, however, may be increased; anoxia, for instance, is one of the greatest causes of increased permeability. It is known that the pulmonary capillary wall obtains its oxygen directly from the alveolar oxygen. Any condition in the respiratory tree that will interfere with or diminish the amount of oxygen passing into the alveolar area will, of necessity, cause anoxia of the capillary wall and thus eventually increase its permeability to the passage of edema fluid. Agents that may cause severe bronchial or bronchiolar constriction can also give rise to severe anoxia. Examples of these are the cholinesterase inhibitors such as muscarine and neostigmine (Prostigmin). The capillary-alveolar barrier may also be damaged by irritant or toxic gases, such as phosgene or chlorine, or by poisons such as ANTU (alpha-naphthylthiourea).

From the Department of Surgery (Anesthesia), University of Illinois College of Medicine.

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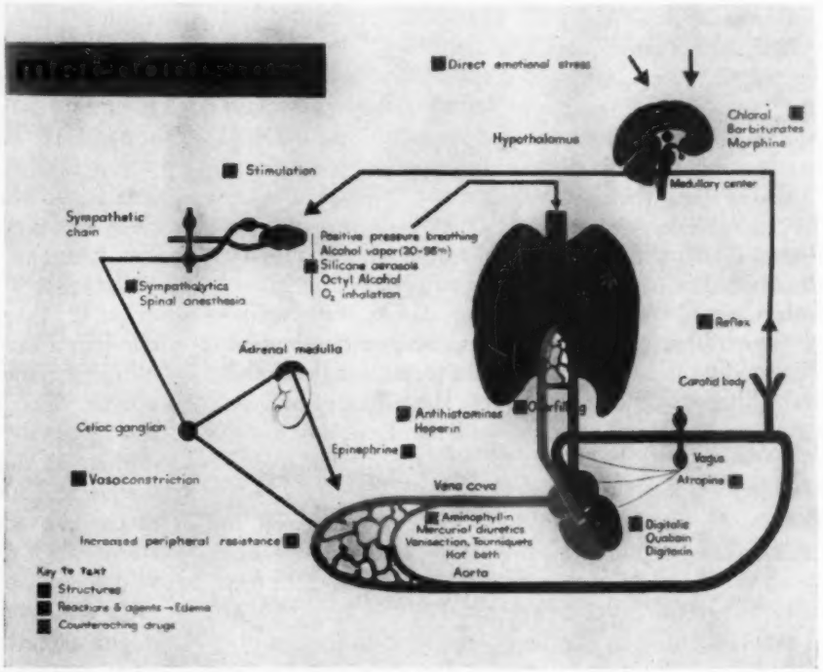
How do the cardiovascular tree and the nervous system influence the formation of pulmonary edema? To take the cardiovascular system first, particularly the heart, left ventricular failure may lead to pulmonary edema. Not all patients with left ventricular failure will develop pulmonary edema, and the converse is also true. However, it may be stated that, should there be increased peripheral resistance and increased venous return on top of the left ventricular failure, then in all probability pulmonary edema may develop. The vascular system contributes to some extent to the formation of pulmonary edema. Under certain circumstances, the greater systemic circulation may constrict, especially the peripheral bed, and shift huge quantities of blood to the lesser pulmonary circulation. Such an occurrence by itself may not necessarily cause pulmonary edema, but in association with left ventricular failure it can do so quickly.

The role of the nervous system in pulmonary edema has not been appreciated too well. Although morphine and other sedatives, e.g., barbiturates, have been employed to alleviate pulmonary edema, one might suspect that these drugs have been employed on an empirical basis. It has been known, of course, that individuals who are prone to develop pulmonary edema may do so as a result of emotional stress. Judging from the preceding statements, one might suspect that the autonomic nervous system may be implicated. It is possible that emotional and other factors can influence the efferent sympathetic arm of the autonomic nervous system and (1) provoke an intense peripheral vasoconstriction, thus shifting blood from the greater systemic circulation to the lesser pulmonary circulation, and (2) cause a relaxation of the constrictors to the pulmonary capillary bed, thus increasing pulmonary capillary pressure and edema.

## Therapy

Treatment has been directed at the nervous system by the use of sedatives such as morphine and barbiturates, which incidentally may indirectly diminish the activity of the sympathetic nervous system. Drugs that affect the heart and the vascular system have been employed. For instance, atropine has been given to block the vagi and increase the heart rate if it is felt that bradycardia may be contributing to the formation of pulmonary edema. Sympatholytics such as trimethaphan (Arfonad) camphorsulfonate. Dibenamine, and direct-acting vasodilators such as aminophylline have been used to cause a vasodilation of the peripheral bed, and it is reasoned that blood may be shifted from the lesser pulmonary bed to the greater systemic circulation. The use of spinal anesthetics is based on the same principle. Attempts to diminish circulating blood volume with drugs and physical methods have been employed. For example, mercurial diuretics, by virtue of their ability to cause great loss of fluids by way of the kidneys, may diminish blood volume and venous return. Physical methods, such as the use of hot baths, venesections, and tourniquets applied to the extremities, also diminish venous return and prevent overloading of the pulmonary circulation. Antihistamines are employed to antagonize or block the vasodilating effect of histamine on the capillary wall.

The hypoxia that develops, however, must be well appreciated. Oxygen inhalations, often under pressure, have been administered to patients with definite pulmonary edema. Although this has helped, it has not always been too successful. One might blame the presence of fluid in the alveolar spaces as a barrier to the diffusion of oxygen across the alveolocapillary area. Though such may be probable, it is an established fact that fluids may be absorbed very rapidly from the alveolar area. Drinker [1] has emphasized the importance of the extensive lymphatic network in the pulmonary bed and especially its ability to absorb any amount of fluid introduced into the area; however, this system fails when a huge quantity suddenly becomes present. The more important barrier to oxygenation is the froth [2] formed out of the edema fluid by the labored respirations of the patient. The frothy material acts as a formidable opposition to the passage of oxygen to the alveolar epithelium. Recognition of this physical phenomenon has prompted an intensive search for agents that might cause dissolution of this foam. In the figure, an attempt is made to present the interplay of the central nervous system, the respiratory system, and the cardiovascular system in the causation of pulmonary edema. The accepted methods of therapy and their sites of action are included.




Interplay of central nervous system, respiratory system, and cardiovascular system in causation of pulmonary edema, and accepted methods of therapy and their sites of action.

## Antifoam Agents

In order for any foam-dissolving agent to be evaluated, it must be tried on an experimental basis in animals before it may be applied clinically. There are thus two problems that confront the investigator: (1) the development of a convenient and easy method of producing pulmonary edema experimentally, and (2) after the therapeutic value of the agent has been demonstrated experimentally, the finding of clinical material for therapeutic evaluation.

The methods for producing pulmonary edema in experimental animals have been reviewed extensively by Luisada and Cardi,[3] several of the methods having been devised by Luisada himself, e.g., intracarotid infusion in dogs of an amount of isotonic sodium chloride solution equal to twice the estimated blood volume, and intravenous injection of epinephrine into rabbits. Inhalation of toxic gases may be employed, but this method is rather inconvenient and hazardous. Certain chemicals may be administered, e.g., methyl salicylate, muscarine, and ANTU, to mention a few. ANTU has been employed by Drinker [1] and probably causes increased permeability of the alveolar epithelium by its toxic action. Brain trauma or irritation has also been utilized, e.g., intracisternal injection of veratrine or fibrinogen and thrombin. The method utilized in this study was the intravenous injection of epinephrine into rabbits.

*Materials and Methods.*—Female albino rabbits were used. The materials tested, as enumerated in table 1, were (1) ethyl alcohol, 10%; (2) ethyl alcohol, 20%; (3) octyl alcohol or 2-ethylhexanol (compound no. 5526); and (4) compound no. 5507, which consisted of silicone, 0.01%; Superinone (a polyhydric alcohol),

0.75%; glycerin, 1%; and potassium bicarbonate, 1%. A 95% alcohol solution was not tested in view of the marked tracheobronchial irritation it caused when the aerosol was inhaled by the investigators. The animal was exposed in a specially constructed plastic chamber to an aerosol of the material formed from inhalation therapy standard nebulizers (Hi-Flo) with oxygen. The animal was exposed to the aerosol for 30 minutes, and then 2 mg. of epinephrine was injected into an ear vein over a period of one minute. This procedure is performed simply by pulling one of the rabbit's ears

TABLE 1.—*Effects of Several Antifoam Agents on Epinephrine-Induced Pulmonary Edema in Rabbits*

| Agent | Animals, No. | Lung/Body Weight* | Av. Survival Time, Min. | No. Surviving More Than 1 Hr. | % Survival† |
|---|---|---|---|---|---|
| Epinephrine (control) | 20 | 1.4103 | 2.90 | 0 | 0 |
| Ethyl alcohol 10% | 15 | 1.223 | 8.33 | 1 | 6.0 |
| Ethyl alcohol 20% | 17 | 1.315 | 24.20 | 3 | 17.6 |
| Compound no. 5526 (2-ethylhexanol) | 25 | 1.0160 | 29.08 | 8 | 32.0 |
| Compound no. 5507 (silicone, 0.01%; Superinone, 0.75%; glycerine, 1%; potassium bicarbonate, 1%) | 34 | 0.8393 | 44.04 | 18 | 53.0 |
| Ethyl alcohol 95%‡ | 16 | 1.030 | 41.00 | 10 | 62.0 |

* 0.455 normal (Luisada[4]).
† Based on no. surviving after 1 hr.
‡ After Luisada and Cardi.[5]

through an opening in the chamber. Consequently, the animal is continually exposed to the vapor. Controls were obtained by injecting rabbits with epinephrine without exposing them to any vaporized agent. The method is a modification of a technique described and utilized by Luisada[4] to test the effect of various antifoam agents on pulmonary edema. Exposure to the vapor was continued for as long as the animal lived—maximally up to three hours.

*Results.*—The results obtained are summarized in table 1. For purposes of comparison, both the average survival time and the ratio of lung to body weight was determined, the latter being equal to the lung weight in grams divided by the body weight in grams, multiplied by 100. Pulmonary edema was indicated by the outpouring of foam from the mouth and nostrils or by cyanosis and tachypnea, which was later proved on autopsy to be due to pulmonary edema and hemorrhage in the lungs.

Of the four agents tested, compound 5507 gave the most impressive results. The survival rate was more than 50%, and, although it seemed to be less than that observed by Luisada and Cardi with 95% alcohol,[5] the ratio of lung to body weight is much smaller, which might be interpreted as indicating an outstanding ability on the part of compound 5507 to interfere with the formation of foam. This inhibitory effect on foam formation was demonstrated at autopsy. Edema was minimal, although pulmonary hemorrhage was present and often quite extensive, probably contributing to the death of the animal. The average survival time of 44.04 minutes was longer than that with all the other agents tested and compared quite favorable with the 41 minutes obtained by Luisada and Cardi[5] with 95% alcohol, another testimonial to its protective ability. Compound 5526 was also tried as an antifoam agent. It, too, had a marked antifoam action. In fact, the average ratio of lung weight to body weight seemed to be smaller than that given for 95% alcohol. However, the average survival time did not seem to be as long as with compound 5507 and 95% alcohol. If average survival time is to be taken as an index of protection against pulmonary edema, then the results obtained with 20% alcohol compared favorably with those obtained with octyl alcohol. However, the lung weight to body weight ratio indicated more edema formation in the rabbits treated with 20% ethyl alcohol than in those treated with octyl alcohol.

## Comment

The value of antifoam agents in breaking down the froth, or foam, formed in pulmonary edema has been known for some time. They probably act by diminishing surface tension, thereby affecting the stability of the thin film of edema fluid over air. Ethyl alcohol was the most useful of the large group of agents originally tested.[4] Its effectiveness was demonstrated both experimentally and clinically. Interestingly enough, it was found that an intravenously given subanesthetic dose was not as effective as that given by inhalation. Yet, when an anesthetic dose was administered orally or rectally, it diminished pulmonary edema considerably. It was further observed that morphine alone compared favorably with inhaled ethyl alcohol in diminishing the formation or morbidity of pulmonary edema. Such findings pointed to the possibility that the favorable effects of ethyl alcohol may in part be due to its depressant action on the central nervous system and further emphasized the role of this system in the causation of pulmonary edema. In this same study ether worked well, but the same could not be said of some of the heavy alcohols, e.g., Span (Sorbitan fatty acid esters) and octyl alcohol.

The effectiveness of silicones (methylpolysiloxane) as an antifoam agent has been pointed out in several studies.[6] The in vitro studies of Rosenbluth[6b] showed

TABLE 2.—*Clinical Results Compared with Results in Other Studies*

| Authors | Agent | Patients, No. | Results: Excellent | Good | Fair | Poor |
|---|---|---|---|---|---|---|
| Luisada, A. A., and others: Circulation 5:363, 1952 | Ethyl alcohol | 17 | 10 | 5 | ... | 2 |
| Reich, N. E., and Rosenberg, B. A.: Am. Pract. & Digest. Treat. 4:616, 1953 | 2-Ethylhexanol | 12 | 6 | 3 | 1 | 2 |
| Present study | Compound no. 5507* | 8 | 6 | 2 | ... | ... |

* Compound no. 5507 consists of silicone, 0.01%; Superinone, 0.75%; glycerin, 1%; potassium bicarbonate, 1%.

that concentrations of from 1 to 25 ppm of methylpolysiloxane suppressed foam formation. Compound 5507, which contains 0.01% silicone, thus has a sufficient amount to affect foam formation. It further contains Superinone, which has been demonstrated to be an

excellent wetting agent or detergent. This agent has also been shown to have a thinning effect on mucus, which probably contributes to the action of this compound on surface tension. The other two ingredients, glycerin and potassium bicarbonate, maintain the vapor pressure of the aerosol and the stability of the aerosol particle. This compound, therefore, may be nebulized into a stable aerosol capable of breaking down or suppressing foam by virtue of its ability to lower surface tension.

The next question that developed has to do with the toxicity of the compound. Silicone per se is not toxic, especially in the small doses employed. Superinone has been proved to be nontoxic, and the same is true for glycerin and potassium bicarbonate, which is a very stable salt. When these agents are mixed together, however, there is a possibility that the resulting compound may be toxic. Therefore, 30 guinea pigs were exposed to compound 5507 and four other compounds in groups of 6 continuously for eight hours daily. One from each group was killed at weekly intervals for autopsy and tissue sections of vital organs. This study definitely showed the innocuousness of the compound. It has no depressant action on the central nervous system.

## Clinical Application

The compound was next employed clinically (table 2). Eight patients in all have been treated. The paucity of such clinical material is apparent and need not be decried, as this syndrome is not too common and occurs rather unpredictably. The compound was nebulized and administered by means of a Bennett or a Halliburton intermittent-positive-pressure unit. Three of the cases are cited as outstanding examples.

Case 1.—A 4-year-old child, who had just undergone an infundibulectomy of a congenital infundibulum in the pulmonary artery, suddenly developed pulmonary edema at the termination of surgery, most probably due to overtransfusion. Frothy secretions were observed to come out of the endotracheal tube, with accompanying cyanosis and rales all over the chest. Compound 5507 was administered by means of a Bennett intermittent-positive-pressure unit, with almost immediate suppression of foam and improvement of the cyanotic condition.

Case 2.—A 59-year-old man, during the course of a gastric resection, developed a cerebrovascular accident. An endotracheal tube was left in place due to the patient's failure to awaken from the anesthetic and his lack of reflexes. Pulmonary edema developed six hours after the operation, as evidenced by frothy secretions, cyanosis, labored breathing, and rales all over the chest. Compound 5507 was administered by means of a Bennett intermittent-positive-pressure unit, with immediate improvement of the condition.

Case 3.—A 20-year-old male was to be operated on for an infected pulmonary cyst on the left side. As he was being placed in the lateral position after induction of anesthesia in order to gain easier access to the cyst, the cyst ruptured and flooded the dependent right side. The patient became cyanotic, with labored respirations, and remained cyanotic in spite of continuous oxygen administration. After seven to eight hours with the patient in this condition, a pulmonary edema developed, with frothy secretions and coarse rales all over the chest. The administration of nebulized compound 5507 with an intermittent-positive-pressure unit cleared up the edema quickly and improved the cyanotic hue of the patient.

True enough, the administration of oxygen under intermittent positive pressure may have contributed greatly to the alleviation of the pulmonary edema. However, the rapid response to the therapy cannot be explained readily by the administration of oxygen under pressure alone. Pressure by itself may not easily break the foam that is interfering with the diffusion of oxygen into the alveolar areas. Four other patients with pulmonary edema showed the same rapid response, except that two developed other complications and eventually died.

## Summary

A new compound, no. 5507, which contains silicone and Superinone (a polyhydric alcohol) as its main components, was tested for its ability to suppress foam in epinephrine-induced pulmonary edema in rabbits. It was compared with octyl alcohol, 10% ethyl alcohol, and 20% ethyl alcohol. It was found to be quite effective in this respect, and compares favorably with 95% ethyl alcohol, as studied by Luisada and Cardi. It has no depressant effects on the central nervous system. Octyl alcohol was found to be effective also in the treatment or suppression of epinephrine-induced pulmonary edema, although not to the same extent as compound 5507. If average survival time alone is taken as a criterion, the beneficial action of octyl alcohol is nearly equivalent to that of 20% ethyl alcohol, although it is far inferior to compound 5507. Compound 5507 was employed in the treatment of eight patients with pulmonary edema, with excellent results. Further clinical application is indicated.

1819 W. Polk St. (12) (Dr. Balagot).

All materials used in this study were supplied by the Winthrop Laboratories, New York.

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# TREATMENT OF FRACTURES OF THE FEMORAL SHAFT IN CHILDREN

Charles S. Neer II, M.D.
and
Edward F. Cadman, M.D., New York

• *The healing of traumatic fractures of the shaft of the femur was studied in 100 children, who were followed up for an average of 5.5 years. Traction was applied initially in 50. Closed reduction, with application of plaster casts but without initial traction, was used in 34. The fracture healed with from 1 to 6 cm. shortening in 45 of the 84 patients with fractures treated by closed means. Growth stimulation produced compensation in 42 of these so that equalization of lengths resulted. There were 9 instances of overgrowth in the 23 displaced fractures that united with normal length after closed treatment. Length remained normal after 16 nondisplaced fractures. Stimulation of growth was proportional to the degree of soft-tissue injury. Overgrowth deformity was a permanent condition. Open reduction was done in 16, and there were 11 instances of overgrowth, 2 of infection, and one refracture in this group. There is virtually no indication for the use of accurate open reduction in this type of fracture. Sixty-five of the 100 fractures were followed by acceleration of growth, so that, when the fracture had united with shortening, the eventual result was the practical equalization of leg lengths. The deviations in rotation about the longitudinal axis and the deviations in alignment corrected spontaneously, so that subsequent correction was not warranted. There were no cases of nonunion. Criteria for satisfactory reduction are suggested. Direct immobilization by plaster spica had several advantages over traction. If traction is used, the danger of Volkmann's ischemic contracture must be kept in mind. Pain was the most reliable warning of ischemia, and a child who is sobbing with pain during the first night must be seen at once and not left without examination until morning. The results of the two closed methods were otherwise comparable.*

A study has been made of the late results of treatment of 138 fractures of the femoral shaft in children between the ages of 6 months and 12 years who were treated consecutively at the New York Orthopaedic–Columbia–Presbyterian Medical Center. In addition, a literature based upon 1,534 similar fractures has been reviewed.[1] We have concluded that fractures of the femoral shaft in children differ from those in adults in that (1) union occurs provided there is bone contact and nonunion is practically unknown, (2) union occurs rapidly, (3) joint stiffness and muscle fixation are not problems, (4) moderate discrepancies in axis and in length correct spontaneously, and (5) the possibility of excessive growth stimulation demands consideration. Few fractures respond so readily to simple measures and yet are so intractable to immoderate care. Most of the complications are due to overtreatment.

## Selection of Cases

Fractures of the cervical, trochanteric, and condylar levels were excluded, as were fractures occurring at birth. No patient over 12 years of age was considered, because fractures in adolescents behave in much the same way as those in adults. There were 11 pathological fractures, and these were eliminated from the series. Clinical and roentgenographic follow-up examinations over a period of two years were required for inclusion of cases in the study.

In the 100 fractures suitable for our study, the most frequent level of injury was the middle third. There were 89 middle-third fractures, 8 proximal-third fractures, and 3 lower-third fractures. There were 16 nondisplaced and 84 displaced fractures. The injuries were usually caused by falling from a height or by being hit by an automobile. Follow-up varied from 2 to 48 years. The average period of follow-up was 5.5 years.

## Treatment

Plaster immobilization was used as the primary method of treatment in 34 patients. Closed reduction preceded application of a spica cast in 18 of these. Traction was used initially in 50 cases (table 1). Skeletal traction was employed in 3 instances, and skin traction was used in the other 47. Open reduction and internal fixation was carried out in 16 cases. All of the 16 nondisplaced fractures were treated by closed means.

## Early Complications

The 84 fractures treated by plaster or traction healed within 8 to 12 weeks without immediate complications other than minor skin blemishes. It was believed that, by the early recognition of the presence of ischemia [2] and by the immediate modification of the apparatus, the development of Volkmann's contracture was averted in two patients who were treated with traction. Pain was the most reliable warning of the presence of ischemia. It is important to emphasize that a child in traction who is sobbing with pain during the first night must be seen at once and must not be left without examination until morning. Two of 16 fractures treated by open reduction became infected postoperatively. Three others lost fixation but united with shortening in a spica cast.

TABLE 1.—*Method of Treatment in 100 Cases of Femoral Fractures in Children*

| | | |
|---|---|---|
| Plaster | 34 | |
| No reduction | | 16 |
| Closed reduction | | 18 |
| Traction | 50 | |
| Bryant's | | 31 |
| Russell's | | 9 |
| Balanced suspension | | 5 |
| Inclined bed | | 5 |
| Open reduction with internal fixation | 16 | |

From the Department of Orthopaedic Surgery, Columbia University College of Physicians and Surgeons, and the Fracture Service, Presbyterian–New York Orthopaedic Hospitals. Dr. Cadman is now in Wenatchee, Wash.

In one patient the bone refractured 12 weeks after operation when the plate pulled away from the bone and its removal was required (table 2).

### Late Complications

There was healing with from 1 to 6 cm. initial shortening in 45 of the 84 patients with fractures treated by closed means. Later growth stimulation usually produced compensation and restoration of length equal

TABLE 2.—*Complications Following Treatment of 100 Femoral Fractures in Children*

| Treatment | Total No. of Cases | Infection | Refracture | Overgrowth |
|---|---|---|---|---|
| Plaster | 34 | ... | ... | 3 |
| Traction | 50 | ... | ... | 6 |
| Open Reduction | 16 | 2 | 1 | 11 |

to that of the uninjured side and occurred in 42 of these 45 patients within 18 months (fig. 1). One of the remaining three patients in whom compensation was incomplete had multiple injuries and was allowed to remain in a Thomas splint until union had progressed sufficiently so that more efficiently adjusted traction failed to restore normal length; the resultant shortening was in excess of 4 cm. In only two patients with discrepancies of under 4 cm. did compensation fail to occur.

Fig. 1.—Compensation in length due to growth acceleration. *A*, lateral roentgenogram showing union with 2.5 cm. of shortening. *B*, full restoration of length when compared to the uninjured side two years later.

Displaced fractures were accurately reduced by closed means, and they united with normal length in 23 patients. Examination 18 months later revealed an overgrowth deformity in 9 of these 23 patients (fig. 2). In contrast, there were only two detectable deformities of shortening in the group of 45 patients whose fractures had united with shortening. Eleven (70%) of the 16 fractures treated by open reduction were followed by overgrowth deformities (fig. 3). Three other fractures treated by open reduction lost fixation and shortened so that, although growth acceleration occurred, it merely effected an equalization of length. In contrast to this, overgrowth deformities developed in only 9 (13%) of the 68 patients with displaced fractures treated by closed methods. The 20 cases of overgrowth averaged 1.7 cm., and none exceeded 2.5 cm. Excess growth occurred during the first 18 months after fracture, and after that time growth proceeded normally. There was little tendency for overgrowth deformities to correct spontaneously with time. The 20 patients with deformities of overgrowth were followed up for from 4 to 19 years, and equalization of length failed to occur.

Fig. 2.—Overgrowth after the use of accurate reduction. *A*, union occurred with the fragments "end on end." *B*, scanogram taken two years later indicating a 2-cm. lengthening deformity.

Growth stimulation was proportional to the amount of injury to local tissue. Although growth stimulation has been reported in the literature after the occurrence of nondisplaced fractures and undoubtedly occurs, it was not seen in any of the 16 cases of nondisplaced fractures in this series.

Thirty-six fractures united with deviation in alignment and rotary axis of from 10 to 20 degrees. These tended to correct spontaneously. In no instance was the residual alteration in anatomy great enough to be permanently noticeable to the patient or to warrant correction. Two patients developed cysts at the site of fracture. No evidence of these lesions could be seen in the initial roentgenographic studies. They were thought to have formed during the repair of the fracture.

## Comment

*Significance of Overgrowth.*—Ollier [3] first noted that irritation of the shaft of a bone could cause an acceleration in the rate of growth that produced an increase in the length of the bone. Ferguson [4] introduced the theory that the interruption of the medullary blood supply to the metaphysis, without injury to the blood supply to the epiphysis, resulted in overgrowth. He described an operation in which the medullary canal was damaged to increase the lengthening of bones. Kishikawa [5] demonstrated that the presence of hyperemia accelerated the rate of growth. He produced hyperemia by administering injections of turpentine and by venous ligation. Compere [6] has emphasized that all longitudinal growth of bone occurs by multiplication of cells at the shaft side of the epiphysis and at the epiphyseal side of the articular cartilage. Any cause of

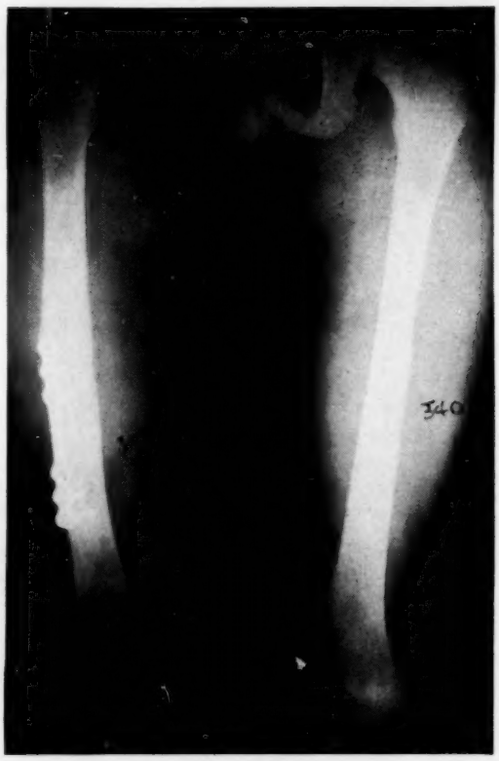

Fig. 3.—Scanogram indicating the presence of a persistent lengthening deformity four years after the use of open reduction and internal fixation with a plate. This treatment is consistently followed by a period of accelerated growth.

hyperemia in the bone and soft parts, e. g., chronic inflammation, arteriovenous aneurysm, sympathetic denervation, and trauma, causes an increased growth rate. The acceleration affects the involved bone to a greater degree than the other bones in the extremity, but the other bones may be similarly affected. It seems probable that hyperemia as a factor is more important than is the interruption of the nutrient artery. Hemangioma, osteoid osteoma, and many other conditions have been observed to cause growth acceleration. This evidence supports the theory of the effect of hyperemia.

Growth acceleration ceases when the cause of hyperemia is removed. In the case of fractures, the period of accelerated growth lasts approximately a year to 18 months during the healing and rehabilitation period. After that time the epiphyses resume their regular rate of growth. The extent of the growth is proportional to the degree of injury to the soft tissue. Rough, repeated manipulations and open reductions increase growth stimulation.

Sixty-five of 100 fractures were followed by accelerated growth. If the fracture had united with shortening, the eventual result was essentially one of equalizing the length of the bones in the legs. If a meticulous end-to-end reduction had been performed, the usual consequence was the development of a permanent length discrepancy due to overgrowth. The results in this study indicate that an overgrowth deformity is a permanent condition. There is little or no tendency for equalization of length to occur with time.

*Question of Surgical Equalization.*—None of the discrepancies produced by growth acceleration in this group of fractures and few in the literature exceeded 2.5 cm., and, therefore, although the deformity is permanent and undesirable, it is unlikely that the inequality would be great enough to warrant epiphyseal arrest by surgery to equalize leg lengths.

*Question of Open Reduction.*—Some surgeons say that open reduction is occasionally necessary for the removal of interposed muscle that would otherwise interfere with union. Yet neither in this series nor in an abundant literature was there a single instance of nonunion. On the contrary, refracturing and delayed union were confined to those cases in which fractures had been treated by open means. It has been said that open reduction is necessary for the correction of angular deformities. However, traction and plaster have proved effective means of controlling alignment. Deviations of 15 to 20 degrees are seen to correct spontaneously within two or three years. Speed [14] said that open reduction should be reserved for late and neglected cases. However, the performance of an accurate open reduction in such a case invariably results in inequality of leg lengths. On the other hand, compensation of shortening of up to 4 cm. has been observed in the vast majority of patients within 18 months. Even open fractures permitted to unite with moderate shortening heal with better anatomic results than those that are reduced accurately. There is no indication for the performance of accurate open reduction, with the possible exception of the presence of a short limb before fracturing.

It should be emphasized that the above statement applies only to fractures of the femoral shaft in children. Patients over 13 years of age require the same type of treatment as adults. Open reduction with intramedullary fixation is frequently the method of choice in the teen-age group.

*Standard for Acceptable Reduction.*—So long as the fragments are within 15 degrees of being parallel, are in contact, and are not overriding more than 3 cm., an anatomic and functional result that is essentially normal can be expected. Rotary defects should be judged by roentgenographic appraisal of the fracture surfaces. These criteria can be met by the use of traction or plaster as desired; however, this study suggests that direct plaster immobilization offers the advantages over traction of a shorter hospital stay, less risk of circulatory complications, and less need for constant adjustment. The results following initial treatment

with a spica cast have equaled those following the use of traction methods. Also, the use of a spica results in the development of fewer difficulties. Inasmuch as the use of powerful force for restoring length is undesirable, the use of skeletal traction is justified only in those rare situations in which circulatory embarrassment and ischemia are present.

### Conclusions

Fractures of the femoral shaft in children 12 years of age and under differ from those in adults in that rapid union occurs, provided there is bone contact; nonunion is virtually unknown; discrepancies of axis and of length tend to correct spontaneously; and late deformity due to growth acceleration may occur. Most of the complications that arise following these injuries result from use of open reduction, and it is emphasized that virtually no indication for the use of accurate open reduction exists.

Fractures uniting with up to 3 cm. of shortening or 15 degrees of angular deformity can be expected to compensate so that the eventual result is anatomically normal. This standard for the acceptability of the results of reduction is suggested. These criteria can be met by the use of closed means. Direct immobilization in a spica cast offers the advantages over traction of a shorter hospital stay, fewer circulatory complications, and less need for close supervision. The results after the use of the two methods are, however, otherwise comparable.

180 Fort Washington Ave. (32) (Dr. Neer).

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## GAS ABSCESS OF PANCREAS

**Benjamin Felson, M.D., Cincinnati**

*• Six cases of gas-containing abscess of the pancreas have been observed in the Cincinnati area since 1948. It is impossible to distinguish this condition clinically from other forms of acute pancreatitis. Five of the patients evidenced glycosuria and/or hyperglycemia during the course of their disease, though none was known to have had diabetes before the acute episode. The diagnosis was first suspected on the basis of radiologic examination, which showed extraluminal gas in the region of the pancreas. Though the number of cases is small, the condition is probably not rare. The prognosis seems unusually poor.*

Although there are numerous reports in the literature dealing with the roentgen findings in acute pancreatitis, the presence of gas within such lesions has seldom been mentioned. Yet gas-containing abscess of the pancreas is not a truly rare entity, and its diagnosis can readily be made roentgenologically. Only seven individual case reports were found in a review of the literature.[1] The subject is briefly touched upon in some of the roentgenology textbooks and in inclusive articles on pancreatic disease.[2] Sands,[3] in a report of 10 cases of gas-containing abdominal abscesses, and Weens,[4] in a study of 6 similar cases, did not record a single case in the region of the pancreas. The present report is based upon six cases of gas abscess of the pancreas seen in the Cincinnati area since October, 1948.

### Clinical, Laboratory, and Pathological Findings

There is little in the clinical or laboratory manifestations that might serve to distinguish gas abscess from other forms of acute pancreatitis. The present series consisted of two men and four women. Their average age was 66, the youngest being 49 and the oldest 80. On admission, all were quite ill, with severe abdominal pain, distention, and prostration. Their temperature was usually mildly elevated, seldom rising above 102 F (39 C). Minimal jaundice was noted in three of the patients. Palpation of the abdomen revealed a questionable epigastric mass in four patients and a definite mass in one. White blood cell counts at the

From the Department of Radiology, University of Cincinnati College of Medicine and the Cincinnati General Hospital.

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time of admission were recorded in five of the cases and ranged between 16,000 and 23,000 per cubic millimeter. The blood serum amylase level on admission was normal in three patients and elevated in two (628 and 800 Somogyi units); in one, the amylase test was not done.

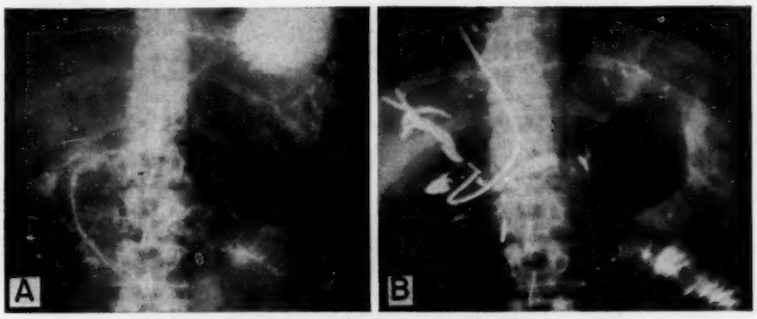


Fig. 1.—*A*, supine view of upper gastrointestinal tract nine days after admission. Entire pancreatic area contains gas. Stomach is considerably dilated. Proximal jejunum is depressed. *B*, postoperative iodized oil (Lipiodol) cholangiogram seven weeks after admission. Abscess is still visible through and to left of the gas-filled stomach, in region of tail of the pancreas.

None of the patients was known to have diabetes mellitus prior to entering the hospital. One patient died shortly after arriving in the receiving ward, and no laboratory studies were performed. In the remaining five, glycosuria and hyperglycemia were found—on admission in three and later during the hospital stay in two. Since it is well known that urinary and blood sugar levels may rise temporarily during an acute attack of pancreatitis,[5] the assumption that these patients were diabetic is not necessarily valid. In the only two patients who survived the acute episode a diagnosis of true diabetes was established later, but there was an intervening period of months during which several urine and blood examinations for sugar gave normal results.

In five of the six patients severe pancreatitis was found at operation or autopsy. In the sixth, the head of the pancreas felt normal at operation (performed for cholelithiasis) five weeks after the acute episode. However, by that time there was roentgen evidence that the abscess had localized to the region of the tail of the pancreas (fig. 1*B*). Since the roentgen findings were typical, and since the serum amylase level rose above 800 Somogyi units on a subsequent admission six months later, the inclusion of this patient in the series seems justifiable.

In four of the five pathologically proved cases the abscess was found to involve the lesser peritoneal sac. In the fifth case its exact location was not recorded. Specific mention of gas bubbles in the pus was made in only one instance. In two cases pus from the abscess was cultured. Escherichia coli was found in one and a sterile culture in the other.

## Roentgen Findings

In all six cases a roentgen diagnosis of gas-containing abdominal abscess was entertained prior to operation or autopsy, and in three the possibility of pancreatic origin was suggested. However, in only two cases was the correct diagnosis suspected from the plain films taken on admission. In two others no gas was apparent in the abscess on the early films, even in retrospect. Therefore, in four cases there was a delay of from 7 to 17 days before the abscess was demonstrable or recognized. The diagnosis was first suspected on the basis of the plain films in three cases and of an upper gastrointestinal series in three.

Unlike the previously reported cases, in which a single unilocular gas-containing cavity was encountered, in this series of cases the gas was invariably distributed in the form of myriads of small bubbles interspersed within a background of water density. The pattern, in roentgen appearance, was similar to that of fecal matter.

The abscesses were located in the upper abdomen and were of rather large size. In frontal view, their position, as outlined by the gas bubbles, varied from patient to patient but always included the pancreatic region.

In four patients the entire length of the pancreas seemed to be involved (fig. 1*A*, 2*A*, and 3*A*). In one patient the bubbles were seen only in the distal two-thirds of the pancreas, and in one they were confined to the region of the tail (fig. 4).

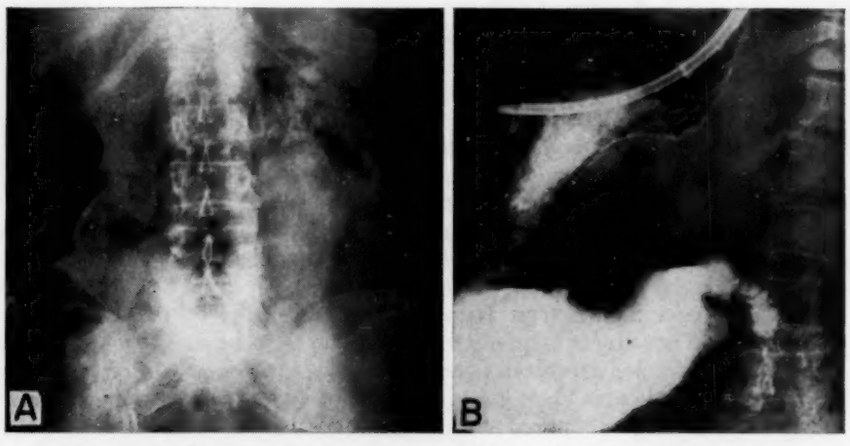


Fig. 2.—*A*, admission flat film, showing gas bubbles distributed throughout region of pancreas but more prominent in body and tail. Fecal matter in transverse colon is closely simulated. Left psoas shadow is obliterated. *B*, lateral view of upper gastrointestinal tract one week later, showing gas abscess behind stomach, impinging on its posterior wall and extending into duodenal loop. Acute gangrenous pancreatitis with lesser sac abscess was found at operation and autopsy.

A lateral view was available in five cases. In each, the gas bubbles were clearly visible behind the body of the stomach (fig. 2*B*), but they extended anteriorly to overlap the gastric outline in three cases and downward into the duodenal loop in four (fig. 3*B*).

A number of other roentgen signs of pancreatic disease were also noted. Displacement of one or more portions of the gastrointestinal tract was consistently found. Impingement upon and displacement of the stomach was usually present, best seen in the lateral view (fig. 2*B* and 3*B*). Downward and medial displacement of the jejunum in the vicinity of the ligament of Treitz was apparent in four cases (fig. 4*A*). In all cases the splenic flexure or some portion of the transverse colon was depressed (fig. 4*B*), often resulting in an increase in the space between the greater curvature of the stomach and the colon. An enlarged duodenal loop was seen in only one of the five patients who received barium orally.

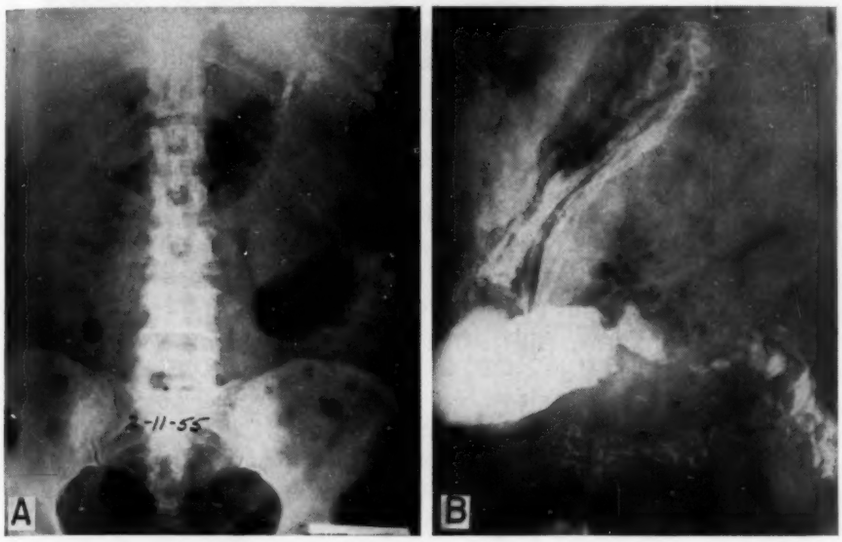


Fig. 3.—*A*, recumbent film four days after admission. Gas bubbles extend through entire pancreas. There is a "sentinel" loop of small intestine gas in left midabdomen. Psoas and kidney outlines appear normal. *B*, lateral view of upper gastrointestinal tract nine days after admission. Gas abscess is compressing posterior gastric wall and has extended into duodenal loop. Duodenal mucosal pattern is altered. At operation, entire pancreas was found to be destroyed by abscess.

Evidence of generalized paralytic ileus was found in two patients, while in three others a single dilated gas-filled "sentinel" loop of small intestine was visible in the upper abdomen (fig. 3*A*). Dilatation of the stomach was noted in four cases (fig. 1*A*) and of the proximal duodenum in two. In one case the abdomen appeared almost entirely devoid of intestinal gas, a finding we have noted on occasion in other cases of acute pancreatitis. Signs of extension of the inflammatory process to other structures were also frequent. Elevation of the left leaf of the diaphragm, pleural reaction, and disk atelectasis in the lung bases were usually present. The shadow of the left psoas was ill-defined or absent in two cases (fig. 2*A*). Alteration of the mucosal pattern of the proximal portion of the jejunum occurred in all four of the patients whose small intestine contained barium (fig. 4*A*). In one patient, subsequently shown to have a normal biliary tract, the gallbladder failed to visualize with both orally and intravenously given contrast mediums, a finding reported in acute pancreatitis by Sylvani and McCorkle.[6] Although erosion into the gastrointestinal tract does occur in acute pancreatitis and might account for the presence of gas in a pancreatic abscess, such a communication was not demonstrated in the present series, either radiologically or pathologically.

The gas vesicles persisted roentgenographically for a prolonged period of time in the two cases in which follow-up films were obtained. In one instance they remained unchanged to the time of death, one month after admission; in the other the bubbles regressed gradually but the abscess was still visible after seven weeks, even though the patient appeared clinically well (fig. 1*B*). Coalescence of the vesicles did not occur in either case.

In an effort to determine the frequency of gas abscess of the pancreas and to discover whether this lesion had been missed, the roentgenograms of 50 unselected patients with acute pancreatitis (62 acute episodes) were reviewed. One case of gas abscess was found and is included in the present series as the sixth case. A roentgenographic diagnosis of abdominal abscess had been made in this patient, but pancreatic origin was not suspected until autopsy.

### Differential Diagnosis

Although the roentgen signs of gas abscess of the pancreas are not pathognomonic, the diagnosis can be made with a reasonable degree of accuracy if one is aware of the entity. The most important consideration in the diagnosis is the recognition of the extraneous gas.

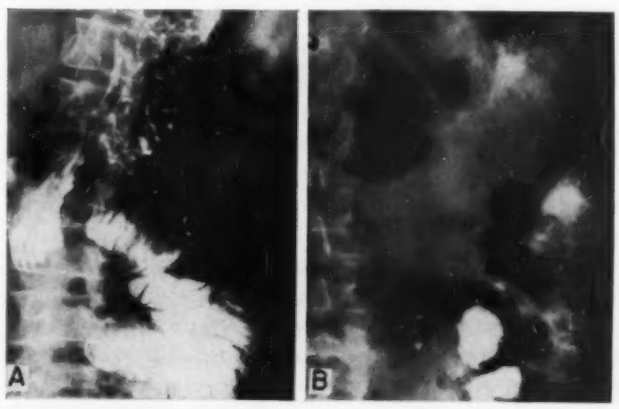


Fig. 4.—*A*, prone oblique view of upper gastrointestinal tract one week after admission. Gas abscess is confined to region of tail of pancreas. Gas bubbles do not extend throughout inflammatory mass. Stomach is displaced to right, and proximal jejunum is depressed. Mucosal pattern in jejunum and along greater curvature of stomach appears edematous. *B*, film of left upper quadrant 24 hours later. Barium-filled splenic flexure is depressed. Subsequently, abscess eroded splenic artery, causing fatal hemorrhage (pathologically confirmed).

In four of the patients in the present series, the clusters of vesicles were at first assumed to indicate stool in the colon or food in the stomach. This, of course, is not an uncommon error in the roentgen interpretation of the acute abdomen. Such shadows

should be carefully evaluated by following the outlines of the gas in the adjacent parts of the colon and stomach. If doubt exists, further studies are indicated. These may include oblique, lateral, and decubitus views, stereoscopic coned films of the area in question, and repeated anteroposterior views after a short time interval. The margins of the abdominal abscess are ill-defined and patternless, in contradistinction to the margins of gas within the lumen of the intestine. The gas in the abscess shifts little with changes in position and is constant in location on all subsequent films.[7] If, after additional views, the problem is still unresolved, barium studies will usually prove conclusive. Once a gas-containing abscess is suspected roentgenologically, its presence or absence can usually be definitely determined by further study. This applies not only to the small vesicle type of gas abscess but also to the unilocular variety, which even more closely resembles a loop of intestine.

Since any abdominal abscess may contain gas, the differentiation of pancreatic gas abscess from an abscess arising in another organ is often difficult. Walled-off perforation of peptic ulcer, especially into the lesser sac, perforating carcinoma of the colon, stomach, or pancreas, and subphrenic, perinephric, retroperitoneal, peridiverticular, and pericholecystic abscesses must all be considered in the differential diagnosis. In addition, the rare conditions of emphysematous gastritis [8] and pneumatosis cystoides intestinalis [9] may simulate pancreatic gas abscess. Most of these conditions can be excluded on the basis of the location of the extralumenal gas. However, when they involve the region of the pancreas, roentgen differentiation may be troublesome.

I have found the lateral view of the abdomen particularly helpful in the recognition of the pancreatic origin of a gas abscess. The presence of gas behind the stomach, in the region of the lesser sac, narrows down considerably the number of possible causes. Administration of contrast mediums to outline the urinary and gastrointestinal tracts will then serve to eliminate perinephric abscess and perforation of the intestine and to reveal additional signs of pancreatitis. The diagnosis is further supported, of course, by clinical and laboratory evidence of pancreatitis and by the presence of glycosuria and hyperglycemia.

## Comment

The gas found in these abscesses of the pancreas must be bacteriogenic in origin, since no communication with the gastrointestinal tract has been demonstrated in any of the cases. It is well known that the Clostridium organisms may produce gas in the tissues, but it is not so generally appreciated that other organisms may do the same.[10] A variety of common organisms, including Klebsiella, Proteus, and Esch. coli may form gas in vitro. Furthermore, gas production in vivo by Esch. coli has frequently been recorded. Gas infections are more common in diabetics, as a result of the action of Esch. coli on the excessive dextrose in the tissue fluids.[11] Since transient hyperglycemia and glycosuria, with or without preexisting diabetes, are common during attacks of acute pancreatitis,[12] and since Esch. coli is often present in pancreatic inflammatory processes,[5] it is surprising that gas abscess of the pancreas does not occur more often.

In the present series, three patients had glycosuria and/or hyperglycemia on admission and two did not. In each of the latter, a single blood sugar determination on admission was normal, but about a week later hyperglycemia was discovered. Glycosuria did not occur in either case. In only two instances was a culture of the pus obtained. Esch. coli was found in one; in the other the culture was sterile. In a series of 98 cases of acute pancreatitis reported from the Cincinnati General Hospital by Siler and Wulsin,[12] glycosuria was found in 7.2% and hyperglycemia in 9.9%. Seventeen of these patients had bacteriological observations; Esch. coli was found in five and Clostridium perfringens in one. The present series is too small for statistical comparison, but the relationship between the glucose metabolism and gas abscess of the pancreas cannot be ignored.

Two features encountered in the present series of cases have not been previously recorded: 1. In all cases reported here the gas appeared in the form of multiple small vesicles; in all seven cases reported in the literature a single large pocket of gas or a single large gas-fluid level was found. No adequate explanation for this discrepancy is offered. 2. Four of the six patients reported here died during the acute episode. The mortality rate from acute pancreatitis at the Cincinnati General Hospital has been reported as 18%.[12] Although the present series is too small for definite conclusions, the figures suggest that gas abscess of the pancreas has an unusually poor prognosis.

The frequency with which my colleagues and I have encountered gas abscess of the pancreas would seem to indicate that it is not a rare entity and that the recognition and investigation of extraneous gas shadows will lead to the detection of many additional cases. Familiarity with this serious condition may facilitate its earlier diagnosis and treatment and may obviate confusion in an otherwise obscure acute abdominal catastrophe.

## Summary

Gas-containing abscesses of the pancreas are not unusually rare. Their diagnosis can be made roentgenologically by the demonstration of extralumenal gas in the region of the pancreas. In view of the high incidence of hyperglycemia and glycosuria in these patients, the gas is probably formed by the action of bacteria on excessive glucose in the tissues. Familiarity with this condition may facilitate its earlier diagnosis and may obviate confusion in an otherwise obscure acute abdominal episode.

The cases in figures 1, 2, and 3 are reported with the permission of Drs. W. S. Terwilliger; D. E. Early and W. R. Dickens; and J. J. Clear and R. J. Neubauer respectively. Another case is included through the courtesy of Dr. H. T. Plaut.

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## CLINICAL NOTES

# REVERSIBLE SUPPRESSED FUNCTION IN UNILATERAL RENAL MALROTATION

Alan L. Abrams, M.D.
and
Alex L. Finkle, M.D., San Francisco

Anomalous or faulty rotation of the kidney, a term applied to congenital variation in position, is seldom the cause in itself of renal functional disturbance.[1] However, in conjunction with intrinsic deformities of renal mass, such as horseshoe kidney, or with some of the common anatomic aberrations of vascular supply,[2] acute or chronic interference with renal function may occur.[3] Similarly, renal torsion, an acquired malrotation, such as results from growth of a retroperitoneal tumor, may impair function of the kidney. These rotational anomalies are clinically distinct from abnormal renal mobility for which nephropexy is advocated to relieve Dietl's crises [4] associated with mechanical obstruction.[5]

The renal pelvis faces anteriorly at the end of the first month of embryonic life. In the sixth week, the kidney derives blood supply from the adjacent area of the aorta, which will eventually be the aortic bifurcation. New arteries are acquired stepwise as renal ascent continues and as former arterial supply is left behind. After slipping over and above the aortic bifurcation in the seventh week, the kidney rotates medially on its long axis during the rise to the final lumbar bed; such rotation is normally complete by the eighth week, at which time the renal pelvis faces posteriorly.[6] Various types of renal fusion constitute the prime interference with normal renal rotation. Rarely, arterial malposition distorts normal renal ascent, resulting in such anomalies as, for example, retroiliac location of the ureter.[7]

The incidence of renal malrotation is doubtlessly far greater than suspected. Only a fraction of such cases come to pyelographic study, and in many of these, the radiologic indications of malrotation receive scant attention. No characteristic symptoms are associated with the condition. Kidneys in such a position are susceptible to any of the diseases that affect normally located kidneys. In addition, however, any mechanical interference with pelviureteral drainage will cause urinary stasis, so that obstruction and/or infection may then produce renal damage, with or without symptoms.

The following report describes an instance of renal malrotation of 180 degrees in which acute initial symptoms developed when the patient was 39 years of age.

### Report of a Case

A 39-year-old married woman was admitted to Mount Zion Hospital Feb. 22, 1955, for investigation of her complaint of sharp, intermittent, nonradiating pain of two days' duration in the left flank. Mild dysuria without frequency or other urinary

From the departments of medicine and urology, Mount Zion Hospital.

symptoms had begun a few hours after the onset of the pain. Admission to the hospital was prompted by several episodes of nausea and vomiting, followed by radiation of the pain to the left lower abdominal quadrant.

The family history was noncontributory. The patient had had left salpingo-oophorectomy, right salpingectomy, and appendectomy performed on March 10, 1954, because of 20 years of

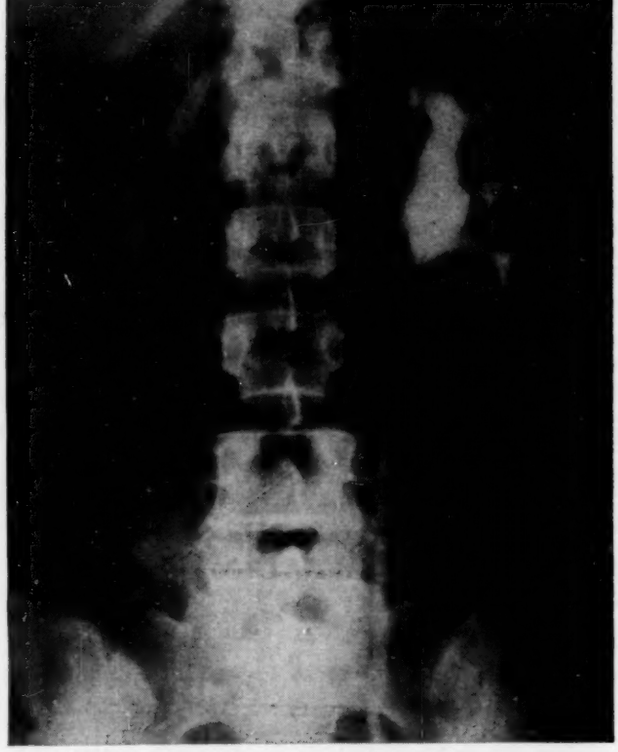

Fig. 1.—Preoperative simultaneous excretory and retrograde pyelogram showing mild hydronephrosis on the left. There is no evidence of calculus. Left renal malrotation of 180 degrees was present but not recognized.

polymenorrhea with dysmenorrhea, acute for six months prior to the operation. The surgeon had found uterine fibroids and heavy formation of intrapelvic scar tissue attributed to chronic inflammatory disease of the pelvis. Recovery from the operation had been uneventful, and the patient's health had been good until the present illness developed.

Findings on physical examination were negative except for moderate abdominal tenderness in the left upper quadrant. Results of hemogram and serologic tests were normal. Urinalysis revealed only an occasional leukocyte per high-power field. X-ray examination of the chest was normal. An intravenous urogram, performed Feb. 24, 1955, demonstrated that the right urinary tract was normal, but no dye was excreted by the left kidney. One hour later, only a poor nephrogram on the left was obtained. No ureteral calculus was seen.

Severe pain in the left upper quadrant developed late in the evening of Feb. 24, 1955. After urologic consultation, an indwelling 6 F. ureteral catheter was immediately inserted up to the left renal pelvis. A constant, rapid drip of clear urine occurred, suggesting hydronephrosis; cultures of the urine were negative. No calculus was demonstrable by studies made on the kidneys, ureter, and bladder. Four days later, as the catheter was withdrawn, a retrograde pyelogram was made. This demonstrated that the left renal pelvis and calyceal system were moderately hydronephrotic; again there was no evidence of calculus (fig. 1).

Choice of a lumbar or lower abdominal surgical approach depended upon the differential diagnosis. It was conceivable that distal ureteral obstruction on the left had developed on an inflammatory basis over many years; it might have been secondary to trauma during the pelvic surgery eleven months before, or it might have occurred as a complication of postoperative scarring. However, no distal ureteral lesion was demonstrated by x-ray examination. The most likely diagnosis was that the condition was congenital, extrinsic ureteroplevic obstruction, although renal infarction and impacted nonopaque calculus were possibilities.

Exploration through a left lumbar incision was done March 4, 1955. The renal hilum was found to be posterolateral in position; this represented a full 180 degrees of "excessive rotation."[6] The renal pelvis faced the psoas musculature, and the renal vessels and ureter coursed to the hilum posterior to the kidney (fig. 2). Aside from a few, small, superficial cortical cysts, the kidney appeared and felt normal. The renal pedicle was carefully dissected, a procedure hampered by the location of the adrenal. This gland lay superior to the pedicle, adjacent and posterior to the upper pole of the kidney, with its base upon the posterior spinal musculature. After the kidney was derotated, a nephropexy was performed by placing, in a subcapsular position, no. 1 chromic absorbable surgical sutures under and around the 11th rib in order to anchor the kidney in the fossa prepared for it by blunt dissection under the dome and lateral leaf of the diaphragm. It was ascertained that the renal pelvis and ureter were free and well clear of the pedicle in the kidney's new position.

The postoperative course was uneventful. An intravenous urogram performed on the fourth day after the operation revealed prompt function bilaterally with minimal caliectasis on the left.

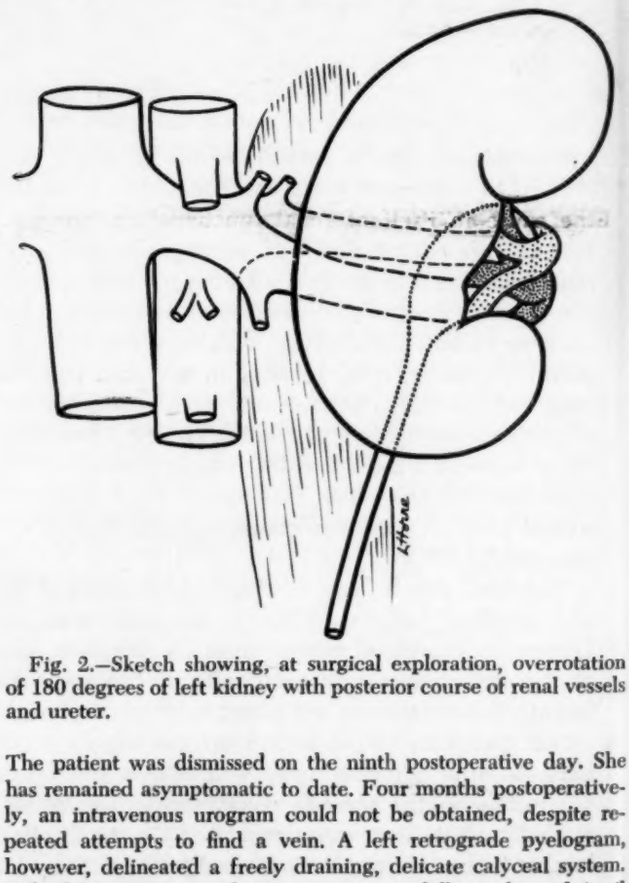

Fig. 2.—Sketch showing, at surgical exploration, overrotation of 180 degrees of left kidney with posterior course of renal vessels and ureter.

The patient was dismissed on the ninth postoperative day. She has remained asymptomatic to date. Four months postoperatively, an intravenous urogram could not be obtained, despite repeated attempts to find a vein. A left retrograde pyelogram, however, delineated a freely draining, delicate calyceal system. A final intravenous pyelogram was successfully performed April 3, 1956, 13 months postoperatively. At that time, the left kidney appeared essentially normal and functioned well (fig. 3).

### Renal Pain

Faulty rotation of the kidney is usually classified as "failure of," "reversed," "complete," and "excessive." In general, an anomalously rotated kidney is more susceptible to pathological complications than a normal kidney.[6] Hydronephrosis, infection, and stone formation are the most common lesions. Nephralgia may occur. Pyelography is usually but not invariably sufficient to establish the diagnosis. Aortography, presacral pneumography, or surgical exploration may be utilized in order to demonstrate the exact disorder. Nephrectomy is sometimes necessary for advanced renal damage.

The exact physiological mechanisms involved in the production of renal pain are not known. It is generally accepted that smooth muscle spasm from the renal pelvis along the course of the ureter is perceived as "colicky pain." Gibson[8] challenged the concept that stretching of the renal capsule produces pain and believes that sympathetic denervation of the renal pedicle incidental to surgical mobilization accounts for the postoperative relief of nephralgia. Kaminsky and co-workers[5] support this view to the extent that they regularly perform sympathetic denervation of the renal pedicle in association with nephropexy for nephroptosis. Ockerblad,[2b] on the other hand, stated that aberrant renal arteries may themselves produce pain. He also suggested that in nephroptosis stretching and kinking of the redundant proximal ureter against the posterior parietal peritoneum produce the pains of Dietl's crises, namely, nephralgia due to acute obstruction of the ureter.[4] Both Maluf[2a] and Foley[9] described anterior bulging of the distended renal pelvis (across an aberrant vessel that acts as a fulcrum) as productive of "renal pain." Braasch[6] inferred from findings at surgical exploration in several of his cases of malrotation that the renal pedicle had been under intermittent tension; symptoms were relieved by freeing the kidney completely and placing it in proper rotation.

Fig. 3.—Excretory urogram 13 months after resection of left 12th rib, renal derotation, and nephropexy. There are delicate calices and satisfactory location of the ureter. Only slight malrotation persists.

### Embryology and Clinicoradiologic Diagnosis

In the case we are reporting, several features are worthy of comment. The posterior course and terminal looping of the vascular pedicle indicated that the position of the kidney resulted from excessive rotation during embryologic development. We should like to suggest a mechanism to account for this developmental anomaly. Consideration must be given to the temporal and anatomic relationship of kidney, adrenal, vertebral column, and body walls as somatic growth proceeds. Active development of the adrenal at the 8-to-10-mm. stage results in a sizable formation in the upper lumbar retroperitoneum by the time the kidney begins to expand into this area.[10] The expansion and ascent of the metanephric bud at the 12-to-15-mm. stage into the "accommodation space" between the Wolffian body and the vertebral column is actually a relative migration: the rapid growth of the vertebral column and its attachments, the adrenal, and the body walls determine the final "rise" and ultimate location of the kidney in relation to contiguous structures.

One might postulate, then, that the overrotation of the kidney and the position of the adrenal between pedicle and kidney resulted from premature development of the ureteral bud. In such a case, ascent and rotation of the expanding renal mass would lack the directive influences of vertebral column, abdominal walls, and, especially, the adrenal. Overrotation of the spatially unopposed kidney would then occur. The synchronization of these events is so critical that a relative lag of only a few hours in adrenal development could result in malposition of the adrenal, as observed in our patient.

One might speculate as to why renal symptoms first appeared when the patient was 39 years of age. An analogous situation may exist in Dietl's crisis, in which pain arises from vertical hypermobility of kidney and upper part of the ureter and which usually occurs for the first time in women of middle age. Possibly beginning weakenings of fascial supports in the fourth decade contribute to increased renal mobility at this time. We suggest that rotational and/or horizontal hypermobility could cause ureteral obstruction in our patient. If twisting of the kidney and upper part of the ureter suddenly occurred, failure to uncoil promptly would account for both colic and suppression of renal function.

Ordinarily one does not think of horizontal and rotational renal hypermobility in radiographic diagnosis. It may be useful in some cases to test renal mobility in other planes in addition to the traditional vertical one. It might be proper in cases such as ours to employ oblique and lateral decubitus views, in ad-

dition to stereoscopic films, during excretory urography in order to include further aspects of kidney movement. Such further visualizations might have revealed the malrotation perhaps noticeable in retrospect in our preoperative films (fig. 1).

Although it has been stated that no corrective treatment of renal malrotation is indicated,[1] we believe that in the present case suppressed renal function was relieved by derotation and nephropexy. It is also possible that, in addition to alleviating obstruction, the later dangers of infection, stone formation, and diminution of renal reserve and even hypertension[11] may have been averted by surgical intervention.

## Summary

Sudden pain in the left flank and dysuria in a 39-year-old woman led to pyelographic identification of a nonfunctioning left kidney. Surgical exploration demonstrated (congenital) malrotation. Derotation and nephropexy effected prompt restoration of renal function. Renal dysfunction attributable wholly to faulty rotation of the kidney is uncommon. Oblique and lateral decubitus views, in addition to stereoscopic films, during excretory urography are useful in making the clinicoradiologic diagnosis. Corrective surgical treatment as a definitive measure for obstructive renal malrotation perhaps warrants greater attention.

2340 Sutter St. (15) (Dr. Abrams).

Dr. J. B. deC. M. Saunders, Professor of Anatomy, University of California School of Medicine, elucidated for us the hypothesis as to the sequence of events in excessive renal rotation during embryologic development.

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**Gallbladder Disease.**—The gall-bladder, like the appendix, has by no means a constant position in the abdomen, although it is less capable of wandering than is the latter. When it is in its customary position, inflammation or stone will as a rule produce the typical symptoms and signs. At other times, however, it lies a long way lateral to its usual point and may give rise to pain, not across the epigastrium, but well to the right side. Although visceral pain is usually felt fairly symmetrically across the middle line, at times the inflammatory process causes it to coincide with the actual position of the organ by involvement of the parietal peritoneum. Thus a gall-bladder placed laterally, the fundus lying approximately in the continuation of the anterior axillary line, is especially prone to cause acute pain in the right side of the chest aggravated by breathing and suggestive of pleurisy. As there is associated inhibition of the diaphragm, it is only a matter of an hour or two before impairment of resonance over the right lower lobe can be detected, as the result of the air's being rapidly absorbed from the partially immobilized lung. The physician may therefore be faced with a patient breathing rapidly and shallowly, clearly in pain, with diminished movement of the right side of the chest and impairment of resonance, and tenderness over the tip of the eleventh rib. It is not unknown for him to make a diagnosis of pneumonia with diaphragmatic pleurisy, when in fact the basic lesion lies in the abdomen. For the first 24 hours it may be extremely difficult to make a diagnosis on clinical grounds, and an x-ray film of the lungs will also be of no help in distinguishing this manifestation of cholecystitis from pneumonia. Acute pneumonia does not necessarily show in an x-ray picture in the first 24 hours. From then on the diagnosis becomes easier because there is an absence of the normal adventitious sounds one would expect in a right basal pneumonia, the respiration rate tends to fall rather than to rise after the initial acceleration, there is no flushing of the face, and indeed jaundice may appear. Gall-bladder disease may simulate so closely that of coronary thrombosis as to present an obstacle to diagnosis. This is especially so if the organ be medially directed. The pain may be constricting in nature and felt across the lower third of the chest and not in the abdomen at all. . . . On paper the differential diagnosis is easy; in practice it has felled more than one expert physician and surgeon.—A. H. Southwaite, M.D., F.R.C.P., Pitfalls in Medicine, *British Medical Journal*, Oct. 27, 1956.

# COUNCIL ON DRUGS

Formerly the Council on Pharmacy and Chemistry

## NAME OF COUNCIL AND TITLE OF ITS ANNUAL PUBLICATION CHANGED

By authorization of the Board of Trustees of the American Medical Association, the Council has changed its name from the Council on Pharmacy and Chemistry to the Council on Drugs, in order that its proper sphere of interest and activity may be more accurately identified. The new name will serve to emphasize the basic function of the Council: to evaluate available evidence for the clinical application of all new drugs as redefined under its new program of operation instituted in 1955.

The Council also has adopted the revised title New and Nonofficial Drugs to supersede the title New and Nonofficial Remedies for its well-known publication describing currently evaluated drugs. The revised title for the publication was selected to reflect more clearly the inclusion of monograph descriptions for evaluated prophylactic and diagnostic agents, as well as for therapeutic agents, including descriptions for drugs of questionable or unestablished clinical usefulness.

The change in name of the Council and in the title of its publication is instituted in the Council's column with this issue of THE JOURNAL to anticipate its implementation in the 1958 edition of the book. Because of previously scheduled early release, the currently revised 1957 edition bears the original publication title and name of the Council, but it maintains the expanded scope of the book initially implemented in the 1956 edition.

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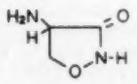
## NEW AND NONOFFICIAL DRUGS

Formerly New and Nonofficial Remedies

*Monographs and supplemental statements on drugs described here and in subsequent editions of New and Nonofficial Drugs are based on the evaluation of available scientific data and reports of investigations. Applicable commercial names for preparations of evaluated drugs are listed at the end of monographs and parenthetically in the text of supplemental statements; additional commercial names of which the Council is informed will be included with subsequently published supplemental statements and annual editions of New and Nonofficial Drugs.*

H. D. KAUTZ, M.D., *Secretary.*

**Cycloserine.**—D-4-Amino-3-isoxazolidinone.—The structural formula of cycloserine may be represented as follows:




*Actions and Uses.*—Cycloserine, an antibiotic substance elaborated by strains of Streptomyces orchidaceus or S. garyphalus, possesses a wide spectrum of antibacterial activity in vitro, inhibiting the growth of both gram-positive and gram-negative organisms. This antimicrobial activity is, however, less than that of most other antibiotics in general use. The drug inhibits the growth of Mycobacterium tuberculosis in vitro in concentrations of 5 to 10 mcg. per cubic centimeter, but its in vivo effect in experimental tuberculosis in animals other than monkeys is negligible due to rapid excretion or metabolic destruction. In human infections, cycloserine exerts a definite antituberculosis effect; however, this is not so pronounced as that produced by streptomycin, isoniazid, and probably aminosalicylic acid. Since the drug is readily absorbed from the gastrointestinal tract, therapeutically effective blood levels may be attained within 4 to 8 hours after administration, depending on dosage. The drug also reaches the cerebrospinal fluid in significant concentrations. The metabolic fate of cycloserine is imperfectly known, but its in vivo degradation is indicated by the failure of the drug to appear in the urine in concentrations of more than 20% of the administered dose.

Cycloserine is indicated in the treatment of severe pulmonary tuberculosis in patients who fail to respond to other tuberculostatic agents or whose organisms are resistant to these drugs. In carefully selected patients in this category, the drug may produce prompt symptomatic improvement as evidenced by subsidence of fever, improvement of appetite, diminution of cough and expectoration, and, in some cases, weight gain. The drug is considered to be less effective than streptomycin and isoniazid in producing long-term improvement. Thus sputum conversions and favorable x-ray changes have been reported, but the incidence of these is variable. Because of this relatively weak tuberculostatic effect and also because of its potential toxicity, cycloserine should not be used for the initial chemotherapy of tuberculosis. Chemotherapy for untreated patients should be initiated with other agents adjudged to be more effective and less toxic, including streptomycin, isoniazid, and aminosalicylic

acid, or combinations of these drugs. If and when resistance to the foregoing agents develops, substantial benefit may follow the judicious use of cycloserine. The ability of cycloserine to penetrate the cerebrospinal fluid suggests its possible value in tubercular meningitis, but its efficacy in the few cases reported to date has not been impressive.

On the basis of past experience, indicating that combined chemotherapy for the treatment of tuberculosis is generally more satisfactory than therapy with a single agent, cycloserine has been administered in combination with isoniazid. Preliminary reports indicate that such a combination may be more effective in controlling tuberculosis than is cycloserine given alone. Such combined therapy offers the possible additional advantage of allowing cycloserine to be administered in smaller total dosages, thereby decreasing the incidence and severity of its toxic effects. Sufficient experience is not available at the present time, however, to adjudge the efficacy of such a regimen; likewise, little or no evidence is available on the usefulness of cycloserine combined with tuberculostatic agents other than isoniazid.

Contrary to original expectations, bacterial resistance to cycloserine does develop, but the speed with which this occurs is not yet certain. Some reports indicate a very slow emergence of resistant strains; others indicate that resistance develops rapidly and is associated with a failure of the drug to improve the pathological process. Whether the emergence of resistance to cycloserine can be delayed by combining the drug with other antituberculosis drugs can be determined only in the light of subsequent experience.

Selected cases of stubborn upper and lower urinary tract infections produced by a variety of bacteria have been successfully treated with cycloserine. Organisms against which it is useful include streptococci, micrococci (staphylococci), Escherichia coli, and Aerobacter aerogenes. It is not effective against Pseudomonas and Proteus vulgaris and is of no value in the treatment of gonorrhea. Since cycloserine has a relatively weak antibacterial effect and appreciable toxicity, its use for therapy in urinary tract infections should be reserved for those patients in whom other antimicrobial therapy is contraindicated because of bacterial resistance or drug sensitivity.

In terms of frequency and severity, but not necessarily long-term damaging effects, the toxic effects of cycloserine exceed those of all other agents commonly used in the chemotherapy of tuberculosis. Depending on dosage, toxic effects referable to the central nervous system occur in a large percentage of patients to whom it is administered. Such effects include headache, vertigo, lethargy, behavioral changes, psychotic episodes, and convulsions. The convulsive seizures vary in type from petit mal to grand mal and have been observed in a sizable percentage of patients receiving 1 gm. or more of the drug per day. When dosage is reduced to 0.5 gm. per day or less, the incidence of convulsions is greatly reduced. The effects on the central nervous system generally appear within the first week or two of treatment and are reversible upon discontinuance of therapy; however, the drug is contraindicated in patients with a history of epilepsy and mental disturbances and should be administered with caution and in reduced dosage to patients with renal insufficiency.

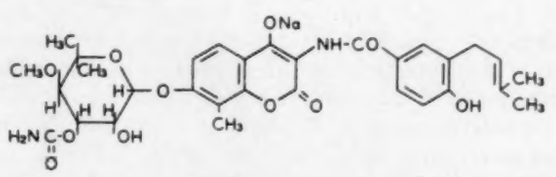
*Dosage.*—Cycloserine is administered orally. Because of its potential toxic effects, the drug should be administered initially only to patients who are hospitalized and who can be closely observed for serious reactions, such as convulsions and psychotic disturbances. Experience has shown that toxic effects may be minimized if blood levels of the drug do not exceed 25 to 30 mcg. per cubic centimeter. It is, therefore, imperative that determinations of blood concentration be made as a guide to dosage. These should be performed frequently during initiation of therapy and then repeated periodically during the subsequent two months of therapy.

For treatment of tuberculosis, blood levels should, if possible, be maintained around 25 to 30 mcg. per cubic centimeter. Initial dosage should be low and then increased gradually if no signs of toxic reaction supervene. As a general guide, 0.25 gm. per day may be administered for the initiation of therapy. If no convulsions or other serious side-effects occur after two weeks, dosage is increased to 0.25 gm. twice daily. This may be continued for an additional 10 days, at which time the dosage is increased to 0.25 gm. three times daily. Although maximum daily dosages of 1 gm. have been administered, it is not yet known whether the therapeutic effect of such a regimen exceeds that of 0.5 gm. per day. In view of the increased toxic effects of the higher dosages, the total amount administered should probably not exceed 0.5 gm. per day. Even in the absence of toxic effects, dosage should be reduced if blood levels exceed 30 mcg. per cubic centimeter. In experimental studies with combination therapy, dosages of not more than 0.25 gm. of cycloserine and 0.15 gm. of isoniazid have been employed every 12 hours. For the treatment of urinary tract infections, the dosage of cycloserine should not exceed 0.25 gm. every 12 hours.

Applicable commercial name: Seromycin.

Eli Lilly & Company cooperated by furnishing scientific data to aid in the evaluation of cycloserine.

**Novobiocin Sodium.**—The sodium salt of an antibiotic substance produced by fermentation from cultures of Streptomyces niveus and S. spheroides. The structural formula of novobiocin sodium may be represented as follows:




*Actions and Uses.*—Novobiocin sodium, an antibiotic with a moderate antimicrobial spectrum whose scope of clinical application has not yet been completely determined, inhibits the growth of many gram-positive organisms in vitro, being particularly active against Micrococcus (Staphylococcus) pyogenes var. aureus.

Except for some strains of Proteus vulgaris and coliform bacteria, it has little or no activity against most gram-negative bacilli of the enteric group. Gram-negative cocci are only moderately sensitive to the drug, and its effect on enterococci is variable.

After oral administration to man or experimental animals, novobiocin is rapidly absorbed from the gastrointestinal tract, producing peak concentrations in the blood within 2 to 3 hours. High levels are found at 8 hours, and detectable amounts may be found in the serum for as long as 24 hours. The antibiotic diffuses in appreciable concentration into pleural and ascitic fluid but not into the cerebrospinal fluid in the presence of noninflamed meninges. Novobiocin is concentrated in the liver and bile and is excreted in the feces and urine.

Novobiocin sodium is indicated for the treatment of micrococcic (staphylococcic) infections. Because of its side-effects and the ease with which resistant strains may develop, it is best reserved for the more serious type of infection in which the patient is allergic to other drugs or in which the micrococci are resistant to the commonly employed antimicrobial agents. Such agents include penicillin, the tetracyclines, erythromycin, streptomycin, chloramphenicol, neomycin, bacitracin, and the sulfonamides. The drug has been successful in arresting serious infections, some of which might have caused death because of uninhibited growth of organisms resistant to all other available antibiotics. To date, it has produced good results in the treatment of cellulitis, various abscesses and ulcers, postoperative wound infections, and micrococcic enteritis and septicemia. Novobiocin sodium also has been used for the treatment of Proteus infections, particularly those of the urinary tract that are resistant to other agents. Although preliminary results are gratifying, further study is necessary to establish its ultimate usefulness for this purpose.

In vitro and clinical evidence indicates that micrococcic resistance to novobiocin develops in a manner similar to that to other antibiotics. To date, no cross resistance to other antibiotics has been observed. In view of its demonstrated effectiveness against sensitive strains of micrococci resistant to other antibiotics, the clinical use of novobiocin should be sharply circumscribed. In general, it should not be used for minor infections, should be withheld until resistance or allergy precludes the use of other antibiotics, and should not be administered until accurate bacteriological identification of micrococci has been made. When indicated, therapy should be sufficiently intense to overwhelm the offending bacteria before resistant strains can develop. Only by preventing the indiscriminate use of novobiocin can its valuable antimicrococcic properties be preserved.

Novobiocin sodium is an antibiotic with a relatively high index of sensitization. Thus, skin rashes, urticaria, and fever have been observed in a significant percentage of patients to whom it was administered. Transient leukopenia, possibly due to the drug, has been reported in about 2% of patients undergoing novobiocin therapy. This has not as yet been observed to progress into true agranulocytosis, but physicians should be alert for this possibility and should make frequent examinations of the peripheral blood during therapy. In some patients the drug also produces a yellow pigment that interferes with the determination of serum bilirubin and may cause false positive reactions. This is, however, a metabolite of the drug rather than a bile pigment. Novobiocin may, therefore, be administered cautiously to patients with liver damage.

*Dosage.*—Novobiocin sodium is administered orally. Since the ability of blood serum to bind the drug may vary from individual to individual, dosage cannot be easily standardized. Hence, physicians should administer the drug in sufficiently large dosages to produce a clinical effect. As a general guide, the usual dose for adults is 0.25 gm. every 6 hours or 0.5 gm. every 12 hours. In unusually severe or resistant infections, administration of 2 gm. or more per day in divided doses may be necessary. For children, total daily dosages ranging from 15 to 45 mg. per kilogram of body weight may be administered, the higher amounts being indicated for the more severe infections. Medication should be continued for at least 48 hours after temperature has returned to normal and all evidence of infection has subsided.

Applicable commercial names: Albamycin Sodium; Cathomycin Sodium.

Merck Sharp & Dohme Research Laboratories, Division of Merck & Co., Inc., and The Upjohn Company cooperated by furnishing scientific data to aid in the evaluation of novobiocin sodium.

**Povidone-Iodine.**—A complex produced by reacting iodine with the polymer polyvinylpyrrolidone.

*Actions and Uses.*—Povidone-iodine is a water-soluble complex of polyvinylpyrrolidone and iodine. On contact with the skin or mucous membranes, the complex breaks down and inorganic iodine is slowly released. Thus, the drug has been used topically as a mild anti-infective agent for the prevention and control of cutaneous infections susceptible to iodine. These include contaminated wounds, streptococcic and micrococcic (staphylococcic) infections of the skin, and certain infections of the mouth and oral mucosa. The complex has also been employed for preoperative preparation of the skin. It has been tried for the treatment of eczematoid ringworm and oral and vaginal moniliasis.

Because of slow release from the organic complex, povidone-iodine does not produce the stinging or irritation usually experienced after topical application of elemental iodine. Sufficient evidence is not yet available to determine its possible sensitizing properties. The complex may be expected to produce the antimicrobial effects of iodine in general.

*Dosage.*—For topical application to the skin, an aqueous solution containing 1 to 1.5% available iodine is applied as needed. Solutions containing 0.05 to 0.15% available iodine have been used at hourly intervals for the treatment of infections of the mouth and oral mucosa.

Applicable commercial names: Betadine; Isodine.

International Latex Corporation cooperated by furnishing scientific data to aid in the evaluation of povidone-iodine.

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## FITNESS OF AMERICAN YOUTH

The President's Council on Youth Fitness has just issued a report "Fitness of American Youth."[1] This report arises out of the Conference on the Fitness of American Youth, originally scheduled to be held in Denver in the fall of 1955 and postponed because of the President's heart attack, held at Annapolis on June 18 and 19, 1956. The conference was composed of 150 invited delegates, representative of various groups including physicians, dentists, educators, physical educators, athletic coaches, athletes, physiologists, and civic, service, and youth-serving agencies. The conference was said to have been stimulated by concern aroused in the President's mind relative to the fitness of American youth. Whether today's youngsters are as fit as those of former generations and their European counterparts has been a subject of much speculation in the press and in professional periodicals. Claims and counterclaims concerning the "softness" of our boys and girls have been the order of the day. The public interest that this controversy has stimulated has served a useful purpose in bringing about the President's conference and thus attracting attention to the importance of fitness in the youth of the nation.

Physicians and educators have long been aware of the importance of fitness in the broad total sense. Both have a concept of fitness considerably broader than physical performance or limited muscular function. A true concept of fitness includes the mental, the moral, the social, and the emotional as well as the physical. It is not dependent on physical perfection, although good physical equipment helps. It is not inconsistent with handicaps, providing the individual can successfully readjust to or overcome handicaps. One of the best and briefest definitions of physical fitness is that which defines it as a state of being in which one can live best and serve most.

Such a concept of fitness is implemented best through a school-community program designed to reach all of our youth. Physicians who have young patients and those who serve the schools and other agencies dealing with youth have a particularly important role in this broad program. The first physician to serve in the nation's schools was appointed in New York City in 1892. In 1911, shortly after the great awakening of health consciousness in the United States, the National Education Association and the American Medical Association established a Joint Committee on Health Problems in Education. This committee will hold its annual meeting in March of 1957 at the headquarters of the American Medical Association and will consider the current problems in health and fitness that concern both physicians and educators. The activity of this committee has never lapsed during the more than 45 years of its existence.

Also, in 1911 the American Medical Association established a Council on Health and Public Instruction, which became in 1922 the Bureau of Health and Public Instruction and was renamed in 1938 the Bureau of Health Education, under which title it still functions. Since the beginning, this division of the American Medical Association has taken a keen interest in the health of the school child. It has cooperated closely with the Joint Committee, with the National Congress of Parents and Teachers, with the State and Territorial Health Officers, with the Chief State School Officers, and with other agencies concerned with the public health and the fitness of youth.

During World War II, the American Medical Association participated with the United States government in a Joint Committee on Fitness, which initiated a number of important research projects, all of which were dropped when the war ended. Not only were the projects discontinued but the government withdrew its membership on the committee, leaving only the American Medical Association representatives. The President of the American Medical Association at that time, who was one of the remaining members of the committee, then requested the Bureau of Health Education to prepare a plan by which the American Medical Association could contribute to the fitness of American youth.

Pursuant to recommendations from the Bureau, the Trustees added to the Bureau staff two professional members, a physician experienced in public health and an educator experienced in health and physical education. No specific "A. M. A. plan" for health in schools was evolved. The professional workers busied themselves with studying successful projects and establishing a center for exchange of information and experience and for cooperative endeavor toward the common goal. Close liaison was established with the U. S. Office of Education and the educational associations, particularly the American Association for Health, Physical Education, and Recreation, the American Association of School Administrators, and the American School Health Association. After several years of study, observation, and cooperative planning, the American Medical Association sponsored a tentative National Conference on Physicians and Schools at

1. Fitness of American Youth: A Report to the President of of the United States on the President's Conference on Fitness of American Youth, Annapolis, Md., June 18-19, 1956, Washington, D. C., Government Printing Office, Division of Public Documents.

Highland Park, Ill., in 1947. To this conference were invited representatives of state medical societies, state education associations, state health departments, and state education departments. This first conference was followed at biennial intervals by four other conferences, each of which resulted in a report of agreement on suggested policies and practices for implementing health and fitness for school-age children. In 1957 there is to be a sixth such meeting, marking a decade of these conferences and planned around the theme of "a decade of progress toward health and fitness."

Following the creation of the National Conferences on Physicians and Schools, state medical societies and in some instances state health or education departments initiated state conferences on physicians and schools. There have also been numerous grass roots conferences within the states, where regional representatives have gathered to discuss, adapt, and implement the recommendations of the national conferences at Highland Park. The result in 10 years has been a rapid acceleration of interest in school health services, healthful school living, and health education. This cooperative effort has brought to bear the combined thinking and experience of representatives of many agencies. The fact that no special formula has been offered has left local groups free to exchange ideas and to evolve plans to fit their own particular needs better than any preconceived pattern could possibly do.

It was, therefore, with great interest that the American Medical Association regarded the President's Conference on Fitness of American Youth. The Association's President Dr. Elmer Hess and the Director of its Bureau of Health Education, Dr. W. W. Bauer, were invited to attend by President Eisenhower. Both participated in the group discussions of the conference.

The conference report offers the sound and constructive recommendation that no new agencies be created to function as project operating entities. Instead, it recommends that the considerable good work already being done be recognized and that studies be made to ascertain deficiencies, gaps, overlappings, duplications, and weaknesses. To this end the conference suggested to the President the establishment of a commission on fitness, to consist of those secretaries in the Cabinet whose departmental responsibilities relate to fitness of American youth in the broadest sense. Also, the conference recommended a citizen's advisory committee to assist with the work of the commission. To both of these recommendations the President graciously acceded. The Cabinet commission has been appointed, an office has been established, and a director has been employed. The personnel of the Citizen's Advisory Committee has not yet been announced.

Physicians in general and especially those interested in pediatrics, public health, or school health services will be vitally interested in the proceedings and the recommendations of the President's commission. Since the commission, under the President's mandate growing out of the Annapolis Conference, is to be concerned largely with coordination of existing programs and since most of these programs are already carried out with medical concurrence and guidance, it is hoped that the commission will avail itself of the resources of the medical profession at the national, state, and local levels in the implementation of its important responsibilities. There is no profession more keenly interested in the health and fitness of American youth than is the medical profession.

## A. M. A. COUNCIL AND PUBLICATION RENAMED

The Council on Pharmacy and Chemistry of the American Medical Association, known by this name since its organization in 1905, has been renamed the Council on Drugs. At the same time, the Council's well-known publication for describing drugs, New and Nonofficial Remedies, which has appeared in annual book form since 1907 and for many years as a regular cumulative feature of the Council's column in THE JOURNAL, is being retitled New and Nonofficial Drugs. Both changes, announced and initiated by the Council with this issue of THE JOURNAL (page 645), are intended to emphasize the primary concern of the Council with the clinical application of drugs and the expanded scope of its new program for evaluation of drugs, instituted in THE JOURNAL during 1955 and in the 1956 edition of the book.[1] The publication of monograph statements on many more new drugs, which became feasible with the inauguration of the Council's new program, is further reflected in the revised and enlarged 1957 edition of the book, currently available under the original title and name of the Council. The Council's new name and revised title of its publication are scheduled to appear in the 1958 and subsequent editions of the book.

With use of the name Council on Drugs and publication title New and Nonofficial Drugs, it is hoped that physicians especially will be encouraged to make more use of the Council's column of THE JOURNAL and the current and succeeding editions of its annual publication as an increasingly informative source of unbiased information concerning the actions, clinical uses, hazards, and dosage of commercially available new drugs. The Council now undertakes to provide such information on all new drugs, whether or not their usefulness and limitations have been conclusively established by currently available scientific data and reports of investigations. In addition, the Council lists all known domestic trade (commercial) names with

1. New Program of Operation for Evaluation of Drugs, statement of the Council on Pharmacy and Chemistry, J. A. M. A. **158:**1170-1171 (July 30) 1955. The New N. N. R., editorial, ibid. **161:**460 (June 2) 1956.

2. Notice of Change in Operation: Listing of Trade Names, statement of the Council on Pharmacy and Chemistry, J. A. M. A. **160:**50 (Jan. 7) 1956. Notice of Change in Operation: Listing of Trade Names Extended, statement of the Council on Pharmacy and Chemistry, ibid. **162:**974 (Nov. 3) 1956.

each new monograph and supplemental statement appearing in its column of THE JOURNAL and also on a cumulative basis, with all monographs and the general index in its annual publication.[2] All applicable commercial names of which the Council is informed are listed as a matter of information without respect to the quality of preparations to which they are applied, in order to supplement the nonproprietary terminology under which the Council describes all drugs. Such information is designed to enhance the value of the Council's publication as a general reference to current clinical information on variously named preparations of identical drugs.

Physicians not already familiar with the modern features of the Council's column in THE JOURNAL and its annual book publication are urged to consult them more extensively as a guide to current therapy. Physicians desiring to purchase the book, on either an annual or a subscription basis, can place orders directly with the publisher, J. B. Lippincott Company, Philadelphia.

## MEDICAL MISSIONARIES

On March 5 at 9:30 p. m. EST over the NBC television network, the March of Medicine television series (produced and sponsored by Smith, Kline & French Laboratories in cooperation with the A. M. A.) will present, in response to public acclaim, the second nationwide showing of "Monganga," an hour-long documentary in color on the work of the missionary doctor. The program shows in detail the work in the Belgian Congo of one missionary physician, Dr. John Ross, and gives an excellent picture of the services these dedicated men perform.

The activities of the missionary doctor are not well known in the United States. Few realize, for example, that many foreign missions were started by doctors or that it was the missionary physician who first brought Western medicine to many parts of the world. The number of people who are serving in church-sponsored medical missions throughout the world is not known. The Christian Medical Council for Overseas Work is now compiling a directory of medical missions, which will not include the missions of all faiths or from all parts of the world, but the data collected so far reveal that the United States alone has many missions in this listing. While those maintained by all faiths are not known in detail at this time, the groups supporting the Christian Medical Council for Overseas Work are represented in 30 countries or areas by more than 50 religious groups. In these hospitals there are probably 500 American doctors and 800 nationals. This group supports about 800 hospitals, 150 schools of nursing, 15 tuberculosis sanatoriums, 2,000 independent dispensaries, and 5 medical schools. Of course this is only part of the picture for missionary work. Best known among those not included in the figures cited are Albert Schweitzer and his hospital at Lambaréné. Such data reveal the spread of medical missionary work.

The missionary physician's first problems are the result of his encounter with an animistic, communal society in which the native believes that pain, disease, deformity, accident, and death—indeed, all physical and mental conditions—are the work of "spirits." To the unschooled native, it seems merely at first that the white doctor has control over different, more powerful fetishes and spirits than the witch doctor.

There is, for example, no intellectual background to accept the microbe theory of disease. As for anesthesia, the primitive native believes that the doctor "kills" the patient, then operates on him, and finally and magically "restores" him to life. Pills and capsules are thought to be amulets, something to be worn against the spirits of disease. This last belief prompts the wise missionary doctor among some tribes to make certain that the patient swallows the medicament; otherwise the pill will be tied to the neck or the elbow as a charm.

The medical man's initial contacts with the native aim to establish a simple, personal relationship. That the missionary also is concerned with spiritual matters, so deeply important to all primitive peoples, further builds rapport. At first, only the venturesome or desperate native will seek the help of the new "spirits," but with time the scope and depth of the relationship grow. In fact, it is fair to say that the missionary doctor provides in many parts of the world the kind of person-to-person confidence that this nation is attempting to create through its Point Four programs.

As Western medicine becomes accepted, it is possible to train the native. Historically, there was little success at first among Africans in this direction; the native felt that the white man's "magic" was beyond his ken. But now thousands have been trained, the majority as assistants and nurses but more and more as doctors. The French are now building a medical school in Dakar. The British have medical schools at Ibadan in Nigeria and at Kampala in the Uganda. The Belgians have excellent training institutions in the Congo.

Missionary medicine has provided and still provides research workers with important clinical data in overcoming such diseases as yaws, elephantiasis, sleeping sickness, malaria, and leprosy. But the great challenge of missionary medicine comes in the need to improve living and sanitary conditions, to overcome widespread nutritional deficiencies, and to train ever-increasing numbers of natives in the "magic" of modern medicine.

## CRYPTORCHISM

The fact that two articles published in this issue (pages 621 and 626) present widely divergent views on the management of cryptorchism points up the need for more careful observation of the course of testicular descent in those persons in whom this course is atypical. Generally speaking the atypical may represent one extreme of a normal distribution curve rather than an abnormality. It is important at the outset to be sure that we are all talking about the same thing,

as it has been suggested on both sides of the controversy that sufficient care is not always taken to differentiate true cryptorchism, in which the testis may be in the abdomen or somewhere in the inguinal canal, and pseudo-cryptorchism, in which it is retracted to a position high in the scrotum. The latter is normal (but not typical) before puberty, and whether the former should be considered normal or abnormal depends on whether by the end of puberty the testis has descended into the scrotum and can produce active sperms.

Many reasons are given for actively treating this condition either medically or surgically. If, because of its position in the inguinal canal, the testis is subjected to greater danger of trauma, treatment is justified. Every undescended testis would not be classed in this group. The consensus is that undescended testes are more likely to undergo malignant degeneration, although the evidence for this is not incontrovertible. Orchiopexy does not reduce the incidence of carcinoma in these testes, but some [1] advocate this operation as a means of facilitating palpation of the testis so that malignant changes may be recognized and treated early. Charny and Wolgin [2] do not consider this a valid reason for operation and advocate orchiectomy if the likelihood of malignant degeneration seems to be great. Because cryptorchism is associated with signs of androgen deficiency in a few patients, some advocate medical or surgical treatment to promote normal development, but Gross and Jewett [3] state that in cryptorchids the secondary sex characteristics develop normally despite the fact that androgen production is only about half the normal quantity. They state further that orchiopexy in these persons does not increase endocrine function. The loose attachment of the undescended testis to the epididymis is believed by some to increase the chance of torsion, but others are inclined to discount this as a reason for treatment. When an undescended testis is associated with strangulation of a hernia, the hernia should be repaired and an orchiopexy can be performed at the same time. Because the person with bilateral cryptorchism appears to be different from other boys, he may become a target for ridicule and treatment may be desirable.

The most important reason given for treatment, however, is preservation of fertility, and it is concerning this point that much of the controversy exists. The testis that is not exposed to the cooler temperature in the scrotum fails to produce viable sperms, but at what age active spermatogenesis is permanently lost is open to question. Some writers believe that, if spermatogenesis is to be preserved, the testis must be brought into the scrotum not later than when the patient is 11 years of age. Others, including Kimbrough and Reed, would seek to achieve this goal at the age of 3 or 4. On the other hand, Drake refers to patients whose testes descended spontaneously as late as 14 years of age and who were found on follow-up to have had children. The prevention of sterility is a reason for treatment only in persons with bilateral cryptorchism. There is some evidence that too vigorous treatment, either medical or surgical, may fail to prevent sterility or may even cause it. Gross and Jewett believe that the failure of orchiopexy to prevent sterility is not due to the concept of orchiopexy per se but to the use of the Torek operation. They believe this procedure should be abandoned and propose a careful dissection of the cord structures that will permit descent of the testis without retraction.

Treatment has been classified as medical, surgical, and watchful expectancy. Medical treatment consists of giving chorionic gonadotropins or testosterone. Since all agree that the undescended testis produces an adequate amount of androgen, these measures should not be used unless definite signs of androgen deficiency are present. In such cases use of these agents may be tried, but only for a short time and in carefully controlled doses. The results so far as promoting descent is concerned have been disappointing, and, when descent does occur during such treatment, it is hard to say whether it was the result of the treatment. If medical treatment fails, which it does more often than not; if the cryptorchism is bilateral; and if the patient has reached the optimum age for orchiopexy, this operation may be performed, but according to Lich [1] and Clarke [4] there should be an interval of months or even one year between operations on the two sides. When operation is justified, avoidance of disturbance of the blood supply by tension, strangulation, or subsequent scar tissue is essential. Lich lists as positive indications for operation herniorrhaphy of an associated inguinal hernia, testicular pain, and missing testis in a patient more than 20 years of age and as elective indications failure of hormones to bring about descent, attempts to preserve fertility (he is not very hopeful about the results in such cases), and prevention of psychic trauma.

One of the chief exponents of watchful waiting is Drake, who observed spontaneous descent by age 17 (the latest) in 11 of 12 patients. If the testis of a person with bilateral cryptorchism descends on only one side, he believes there is little reason to worry about the other. Kimbrough and Reed also advocate watchful waiting, but not past the third year in persons with bilateral cryptorchism. Such disparity of opinion among well-qualified observers suggests serious gaps in available basic information. It is difficult at times to evaluate the results of treatment, whether medical or surgical, and be sure that these results would not have been as good, or in some cases better, if nature had been allowed to take its course. In some cryptorchids spontaneous descent takes place late in puberty without the condition having produced sterility, and yet, in those in whom this does not occur, the results of treatment are often far from satisfactory.

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1. Lich, R., Jr.: Cryptorchidism, Am. Surgeon **22**:198-203 (Feb.) 1956.

2. Charny, C. W., and Wolgin, W.: Management of Cryptorchism, Surg. Gynec. & Obst. **102**:177-186 (Feb.) 1956.

3. Gross, R. E., and Jewett, T. C., Jr.: Surgical Experiences from 1,222 Operations for Undescended Testis, J. A. M. A. **160**:634-641 (Feb. 25) 1956.

4. Clarke, A. M.: Undescended Testis: When and Why to Operate, M. J. Australia **1**:222-224 (Feb. 11) 1956.

# THE PRESIDENT'S PAGE

## A MONTHLY MESSAGE

"The children now love luxury; they have bad manners, contempt for authority; they show disrespect for elders, and love to chatter in place of exercise."

No, this is not one of the current criticisms about the fitness of our youth. It was written by Socrates some 2,400 years ago. But it is similar to the indictments leveled against the present generation of youngsters. Personally, I am a little tired of those who bemoan and bewail the lack of fitness in our youth. I believe our youth is healthier than ever before.

I say this for many reasons. Statistics show that our youth today is taller and heavier on the average than any previous generation. They show that longer years of life are in store for today's youth, that chances of living to start school are better than 96 in 100, and that chances of living through the school years (5-18) have reached an all-time high of better than 99 in 100. Of course, youth can be completely healthy but not necessarily fit. Physical, mental, and social tests, however, prove that youth is fit.

1. In every war in which the American people as a whole have been committed, our youngsters have shown themselves superior in motivation, in will power, in dedication. When the going was rough, the response and devotion of youth was superlative.

2. In the Olympic games the United States has been superior in men's track and field, basketball, and other activities that are part of our sports culture.

3. Scarcely a record now endures from the time when the youngest of us took part in swimming, track and field, and other events for which objective records are kept. This record-breaking is not confined to Olympic champions or varsity athletes. It reaches into intramural sports in colleges and into high schools, clubs, and youth activities.

4. From a mental health standpoint our youth is not cracking up. Any real increase there may be in mental illness is found among older persons and is due primarily to aging of the population.

5. Rejection rates in military service are not a valid index of health or fitness, since standards were arbitrary and varied. They were based on the number of examinations, with many rejectees examined several times and individuals rejected more than once. Frequently rejection rate reports did not include consideration of volunteers. Social and education defects, which have no bearing on health or fitness, also distorted the picture.

I do not mean that the health of youth is perfect, or that our youth is as fit as it could be. There is always room for improvement. And there is a need for a broader application of programs of health and fitness for all American youth.

Recently I had the opportunity to present these ideas to a California meeting of school health and physical education personnel. I was proud to explain how the American Medical Association and the National Education Association for 45 years have cooperated through their Joint Committee on Health Problems in Education to develop health and fitness programs in the schools.

In addition to the Joint Committee's work, the A. M. A. has sponsored five national conferences on physicians and schools. A sixth conference is scheduled for this fall. At these conferences, representatives of education, public health, and medicine from the various states work together to decide on mutually acceptable policies and practices. Equally important, they try to suggest ways in which educators, public health personnel, and physicians in private practice can work together at the state and local level to advance the health and fitness of children and youth.

Many states also are sponsoring statewide and regional conferences on physicians and schools. The objectives are similar to those of the national conferences. The national conferences as well as those held in the states are an attempt by the medical profession to make an effective contribution to health and fitness objectives.

I am happy to say that the A. M. A.'s Conferences on Physicians and Schools, along with a variety of other activities, have resulted in the delineation of a program of health and fitness for American youth. This program has been agreed upon by education, medicine, and public health and set forth in publications at the state and national level. While it is being carried out effectively in some places, it needs broader application if it is to serve all children. It can use your help and mine.

DWIGHT H. MURRAY, M.D., Napa, Calif.

# ORGANIZATION SECTION

## POLIOMYELITIS

**The Problem.**—Some 150 medical society representatives from all 48 states, the District of Columbia, Alaska, and Hawaii braved Chicago's near-zero cold one day last month to face the challenge of poliomyelitis before it erupts during next summer's heat. Reports from trustees and officers of the American Medical Association, public health officials, executives of various branches of medicine, communities on the offensive against poliomyelitis, Dr. Salk—all these reports painted the danger, suggested the action, and looked to the future. First was heard the danger.

Dwight H. Murray, A. M. A. President, said, "Only one out of every six adults between 20 and 35 years of age has even started on their inoculation program. . . . None of the other diseases for which we have vaccine has such devastating economic consequences as polio, particularly when it strikes the breadwinner. . . . The older the person is when stricken by polio, the more devastating the effects. . . . Roosevelt was paralyzed at 39."

Gunnar Gundersen, Chairman of the A. M. A. Board of Trustees, said: "Parents feel the polio season is far away, there is no need for alarm and there is plenty of time to get the required shots. Just the opposite is true. Inoculation time for 1957 is right now." David B. Allman, A. M. A. President-elect, said, "We face a situation today where we have sacrificed thousands of lives, years of research and millions of dollars in search of something that, after we have found what we were looking for, we refuse to use." Jack C. Haldeman, U.S. Public Health Service, said, "Only four states have so far ordered sufficient vaccine to meet 55% to 65% of their needs."

**The Program.**—Well before a special A. M. A. committee called the Jan. 26 meeting in Chicago, at least a half-dozen antipoliomyelitis campaigns were under way in various parts of the nation. Medical society officials from these areas told how other organizations, medical and nonmedical, helped them.

In Chicago, the health department and the medical society conducted an all-out campaign for a vaccination program. Foreign-language newspapers spread the word, and radio and television stations made frequent announcements. The metropolitan dailies listed dozens of hospitals where time and supplies were donated in free clinics so that physicians could serve with inoculations in the face of last summer's epidemic. And at the health department clinics thousands lined up for their injections. Disc jockeys in North Carolina last July repeatedly used the state medical society's slogan: "Walk with Salk, so you can rock 'n' roll." Letters asked every high school and college athletic director in the state to have his athletes immunized. The Summit County Medical Society credited the Akron Beacon Journal with financing vaccine at an adult free clinic, and with helping persuade 30,000 persons to be inoculated in doctors' offices last October.

In the two months just ended, 14,000 physicians of New York County donated their time for on-the-spot mass inoculation programs in which housing projects, college students, industrial groups, labor unions, hospitals, nursing organizations, P. T. A.'s, service clubs, and women's clubs also contributed. Many businesses bought vaccine for their employees. Vaccinations in doctors' offices were billed almost universally at the society's suggested fee of $3. (Two days before the A. M. A. meeting, New York's Governor Harriman announced the start of a statewide antipoliomyelitis drive.) The Michigan State Medical Society, working with school authorities, chose last Christmas vacation to immunize children against both poliomyelitis and diphtheria, which then recently had struck in Detroit. The Dade County Medical Association in Miami launched its campaign last month with "saturation" messages on radio and television. To point out the adult need for serum, the association's slogan is "All Out—All Ages." Three weeks ago, 14,000 women conducted a "Mothers March on Polio."

Speakers at the Chicago conference added to the blueprint of ideas and action. U. S. Surgeon General Leroy Burney said, "Never before has such a large federal sum ($50,000,000 for vaccine) been invested, over so short a period, in an effort to control a single disease." S. F. Ravenel, North Carolina State Medical Society, said, "It doesn't matter whether Salk vaccine is endorsed by President Eisenhower, the surgeon general, Mr. Basil O'Connor, the president of the A. M. A., the president of the state society, or anyone else; the patient wants to be assured of its safety, efficacy and necessity by his own physician."

**The Prognosis.**—There has appeared unanimous agreement about the rewards of effective effort against the currently described "public apathy" toward inoculation if all 1,191 component medical societies in the nation enlist the aid of their communities in immunization programs. Salk said, "There need be little if any paralytic polio in the United States in 1957 if all who are potentially susceptible are treated with vaccine that is now available. [A two-week to six-week interval between first two doses, and a final dose recommended seven months after the second—although even three months affords much third-dose protection.] A single dose of vaccine before pregnancy will markedly enhance antibody levels and confer upon the newborn a high level of passive immunity."

Samuel Z. Freedman, president of the Medical Society of the County of New York, wrote in the society's journal, "Once we get Salk vaccine into the general population, the oncoming crops of babies can be handled by the GP's and pediatricians in the ordinary and customary procedures of office practice along with shots for diphtheria, whooping cough and the other vaccines." Dwight Murray said, "This public service project promoted by the medical profession is aimed at the key target of eliminating the disease once and for all."

## THE AKRON, OHIO, DOCTOR'S ORCHESTRA

The Doctor's Orchestra of Akron, Ohio, was organized in November, 1926. When the present season is over it will have given 201 concerts for 33 hospitals and other institutions and organizations in 11 cities of Ohio. Of the concerts, eight have been benefits for the City Hospital of Akron, St. Thomas Hospital, Barberton Citizens Hospital, and Wadsworth Municipal Hospital. The concerts this season will be for the Children's Hospital, St. Thomas Hospital, Sumner Home for the Aged, Summit County Society for the Blind, University Club, Our Lady of the Elms Convent, Fairlawn Country Club, and the Summit County Historical Society.

The director, Dr. A. S. McCormick, has conducted 28 American and Canadian bands and orchestras and has composed 22 marches. He, Dr. R. E. Pinkerton, and Dr. G. R. McRitchie have been with the orchestra since it was founded. Dr. Arthur Dobkin, the concertmaster, has been with it 29 years. He is president-elect of the Summit County Medical Society. Dr. McRitchie has played with the Cleveland and Toronto symphony orchestras and with Sousa. Dr. Pinkerton, first cellist, has played with chamber music groups. Dr. H. O. Musser, pianist, was also a church organist. Other members have played with important organizations, a few of which are the Akron Symphony, the Indianapolis Symphony, the Akron Masonic Band, the Ohio State University Band, the 31st Division Band, and the Band of the Victoria Rifles of Canada.

The orchestra never plays on any occasion if by so doing it will deprive musicians of work. It has therefore had the friendship and support of the Akron Federation of Musicians. Eight members of the orchestra have reciprocated by joining the federation. It also has the support of the American Society of Composers and Publishers, which expressed itself as follows: "The Society is happy to contribute its share in so worthy a cause by making available gratuitously to the Orchestra the repertoire within its control so long as it continues its charitable and commendable performances."

Of the members, 31 have served in the U. S. Army or Navy or in the Canadian and British armies. In World War II, three were killed and two wounded.

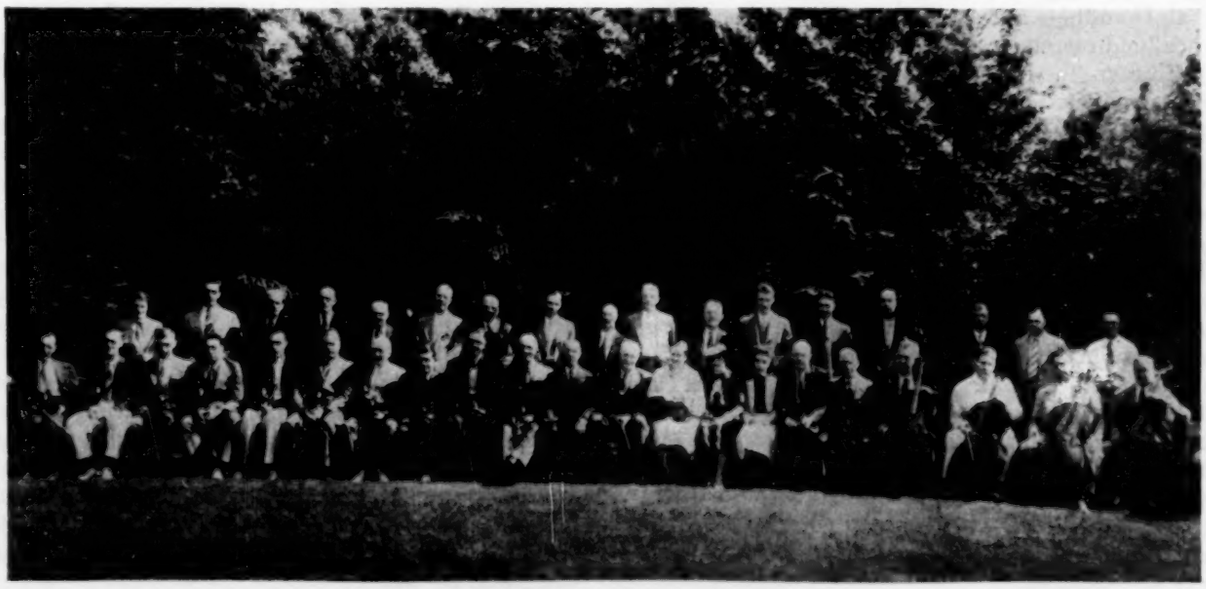
When Mr. F. J. Farinacci, conductor of the Akron Symphony Orchestra, appeared as guest conductor of the Doctor's Orchestra, he addressed the audience and expressed his pleasure at the excellence of the organization and the splendid manner in which they played the Overture to "Martha" under his direction. The orchestra is composed of doctors of medicine, members of allied professions, and a few laymen who play instruments for which doctor-players are not available. During its 31 years, 156 doctors have been members. The orchestra's only revenue is that obtained by contributions from local physicians.

## NEW GUIDEBOOK ON MATERNAL DEATH STUDIES

A new "Guide for Maternal Death Studies" will be made available through the A. M. A. Council on Medical Service for distribution to state and county medical societies interested in developing similar studies. In addition to the guides, the publication will include a description of seven maternal death study committees now in operation, sample forms, material showing how these studies are being used in postgraduate education, and a list of direct and indirect causes of obstetric death.

## SURVEY OF COUNTY MEDICAL SOCIETIES

Questionnaires to determine the scope of activity in various areas—including public education, community service, society projects, meetings, personnel, and finances—will be distributed early this year by the A. M. A. to all county medical societies. This fifth biennial survey of county medical society activities is being undertaken by the Council on Medical Service and the Department of Public Relations with the assistance of other A. M. A. departments.



Members of the Doctor's Orchestra of Akron, Ohio.

## BUREAU OF MEDICAL ECONOMIC RESEARCH

# ANDERSON VERSUS THE U. S. DEPARTMENT OF COMMERCE

Frank G. Dickinson, Ph.D., Chicago

In the acknowledgements of this small volume,[1] Odin W. Anderson describes the contribution of Feldman in the following words: "In addition to Jacob J. Feldman, who was the staff member of the National Opinion Research Center, University of Chicago, most intimately concerned with the over-all technical aspects of the survey, other staff members of the Center who deserve mention are. . . ." This would seem to establish Anderson as the responsible author of this publication.

Through a national survey sample of 2,809 families, Anderson, from the Health Information Foundation, has gathered a formidable amount of data on family medical costs, insurance coverage, and benefits. The chief aims of the study were to examine the distribution of medical expenses, the extent of health insurance, and the effect of such insurance on the cost and utilization of medical services. Several concise chapters describe the history and current enrollment of voluntary health insurance. The greatest portion of the book, which contains 132 tables and 54 charts, consists of the analysis of the data accumulated through personal interviews with the surveyed families regarding their experiences with illness and its costs to them between July 1, 1952, and June 30, 1953.

### Obstetrics and Age of Family

Although the selection of the small sample of families and the survey appear to have been conducted in accordance with standard procedures, the analysis of the data can be criticized on several points. A basic defect in this analysis of family medical costs is Anderson's failure to take into account the age and sex of the family members as well as their income. The survey's findings that obstetrics alone accounted for 11% of all fees paid to physicians (exceeded only by the 21% paid to surgeons [page 23]) and 18% of all hospital admissions should have indicated the necessity of differentiating between "younger" and "older" families. Certainly few families with no females between ages 15 and 45 could be expected to incur obstetric expenses. Young parents during the childbearing years probably will expect greater medical expenses than middle-aged couples whose children are grown; also, a large proportion of young couples are in the lower-income brackets. Unless income is correlated with the ages and the number of persons comprising the family unit, an analysis of family medical costs is virtually meaningless. The failure to consider these factors is a serious deficiency in a study purporting to examine "family medical costs."

The basic failure to remember that health is primarily a function of age and sex—what we know as men we must not forget as judges—has lead the author of the report directly into a trap. He assumes, as did the Committee on the Costs of Medical Care a quarter-century ago, that higher-income families spend a lower percentage of their income on medical care because they have higher incomes. He missed an opportunity to check this traditional assumption; his defense could be that his sample was too small to permit standardization of the age and sex distribution of families before classifying them into income groups. The finding that one-ninth of the payments for physicians' services was for obstetrics should induce a research economist to reexamine the data for nonhomogeneity. It is worth noting again that pregnancy is not a disease, although it usually involves physicians' services.

### Insurance and Surgery

One purpose of the study was to determine the effect of health insurance on utilization of medical services, and in this sphere the author is on tenuous ground because of his assignment of faulty causal relationships between income and utilization and between insurance and utilization. It is doubtful that measures of these factors can be inferred from the survey data. Consider such statements as "Thus, it is apparent that the primary factor accounting for the greater amount of surgery is the existence of insurance" (page 69 and table A-94). Although many observers might agree with the finding, the author should have first divided his insured persons into those covered by individual policies and those covered by group insurance contracts. Nevertheless, the most useful parts of the study deal with insurance coverage—chapters 2, 3, and 6.

### More for Physicians, Less for Hospitals?

On the basis of the survey findings, estimates of total personal consumption expenditures for medical care in the United States are developed. Estimates are also given for the five components of medical care—physicians' services, hospitals, drugs, other medical goods and services, and dentists' services. The author

Director, Bureau of Medical Economic Research, American Medical Association.

has redefined the five subcategories, however, so that his estimates are not comparable to those published since 1929 by the U. S. Department of Commerce, the recognized source for these data. The reasons for these shifts are not clearly stated. The Department of Commerce assigned 28% of the medical-care dollar to physicians' services and 26% to hospitals in 1952, whereas the author, on the basis of this small sample survey (for only one year), assigned 37% to physicians and 20% to hospitals. Only in a footnote (page 23) does he speculate on the possibility that since 1929 the hospitals' and the physicians' shares of the medical-care dollar—using his definitions—have been converging, as has also been indicated by the Department of Commerce data since 1929. Such long-time trends are extremely valuable to medical economists.

If one desires to change the Department of Commerce classifications, it is incumbent on him to develop an entirely new system and apply it correctly to the data. For example, the author classified under physicians' services all payments for the services of salaried physicians in hospitals, including payments to hospital outpatient departments. He did not estimate the excess of such payments to hospitals above the actual amounts paid to salaried physicians.

### Incomplete Reallocations

If the author wants to reduce the hospital charges to component parts, he must be consistent and reduce, also, the other medical care expenditures into component parts. For example, the physician's average operating costs of 40% of gross income should be deducted from physicians' charges and allocated to such costs as supplies, nursing, automobile, telephone, rent, office help, and taxes. For consistency, hospital charges for drugs would be so classified, but in this study these charges are included as hospital charges. Similar reclassifications could be made for other hospital operating costs. This method of allocating charges results in sharp modification of the concept of the hospital used in personal consumption expenditure data from that of an institutional consumer to a group of subdivided categories of receivers of income. Moreover, hospital rates might be higher if hospitals were not exempt from some kinds of taxes.

The author classifies osteopaths' services along with physicians' services and incorrectly states that the Department of Commerce so classifies osteopaths; the fact is that osteopaths are grouped in the "all other medical goods and services" by the Department of Commerce. Curiously, the author classifies the services of ophthalmologists under "all other," along with chiropractors, faith healers, etc. Also included under physicians' services are bad debts, which are excluded by the Department of Commerce. It should further be noted that these survey data were obtained from the reported expenditures of 2,809 families, while the Department of Commerce data are derived primarily from reported incomes and expenditures; had both estimates been otherwise comparable, it would have been interesting to compare results of the two estimating methods, because both approaches are subject to substantial overreporting or underreporting biases. The Department of Commerce estimates have the great advantage of comparability over a period of years and are customarily preferred to any estimates developed through a small sample for a single year.

Other minor inconsistencies in the work are annoying to the careful reader. For example, on page 142, charges for cesarean delivery are allocated to obstetrics and, on page 177, to surgery.

### Some Questionable Generalizations

In the last chapter, entitled Implications, the author outlines in what measure the findings bear on the field of health insurance and generalizes regarding the financing of the cost of medical care. He advocates increasing the benefits for those now insured and increasing the number of people covered in order "to spread costs according to income" (page 83). To this end, he suggests a subsidy "from one source or another" to provide insurance coverage for the low-income group. It seems rather strange that this report of a research group supported by private corporations whose existence depends on their ability to show profits should contain such comments as follow: ". . . the problem is one of spreading this cost [the $10.2 billion personal consumption expenditures for medical care] over all families through insurance premiums." And, "It would seem to be a generally accepted principle that costs should be spread in accordance with ability to pay, and it is obvious that they are not so spread today." Surely he recognizes that physicians and dentists do make some attempt to adjust fees to the income of the patients. However, is this "principle" generally accepted by all who supply services and commodities in the health field? If so, it would be interesting to try it out in the purchase of drugs and other pharmaceutical products—higher prices to higher income families. This idea—from each according to his means, to each according to his needs—is scarcely new, but historically this philosophy has encountered considerable resistance in the market place.

The author had a fine opportunity to make a major contribution to our knowledge of medical care costs, but the book is disappointing. The complex economic and sociological questions raised remain to be answered by a more perceptive treatment of data. On the other hand, some of the detailed information on health insurance coverage should be helpful to insurance men.

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## MEDICINE AND THE LAW

# PUT IT IN WRITING, DOCTOR!

J. W. Holloway Jr., LL.B., Smithfield, Va.

The written record that a physician maintains of his treatment of a patient frequently mirrors the quality of the care given the patient. It also may reflect the professional competence of the physician himself. The fact that written records should be maintained need not here be belabored. Their general importance to the physician in his continuing study of the patient's condition and in evaluating and reevaluating the correctness of the initial diagnosis and the treatment being applied is obvious. It is to the patient's benefit also that the written record be a complete one to serve as a constant reminder to the attending physician of the progress of his case so that danger signals can be promptly detected and changes made, if indicated, in methods of treatment. Leaving from consideration these aspects of the written record, however, let us relate the record and its contents specifically to the matter of professional liability or malpractice.

### Total Absence of Written Record

It puts a bit of strain on one's credulity to believe that a physician would undertake to treat a patient without making any notation whatsoever of at least the fact of treatment. One such instance is reported in the medical literature (and there may be others), an instance that involved a professional liability suit.[1] A claim was made against a physician, alleging injury due to negligent treatment. During a pretrial consideration of the claim, the physician declared that he had never seen or treated the plaintiff, basing the declaration on his memory and on the absence of mention of the alleged patient in his files. The patient was able to establish, however, by two witnesses who accompanied him to the physician's office, that he had been under the defendant's care and had received treatment. The inability of the physician to recall the patient and the absence of any written record of the visit made the defense practically hopeless. Moral? Put it in writing, doctor. Do not trust to what may be a fickle memory.

### Instances of Adequate and Inadequate Records

The late Dr. Louis Regan in his book "Doctor and Patient and the Law"[2] refers to several instances in which the contents of records, or omissions, have been of significance in malpractice cases. A reference to some of them may serve as a caution to physicians.

Case 1.—This case turned upon the question of how long, and when, the patient was under treatment. The patient's and the doctor's statements were totally contradictory. The doctor's "records" consisted of a single entry, under an illegible date. The jury gave a verdict against the doctor.

Case 2.—A physician wrote two prescriptions for a patient. The claim was made that he transposed the directions for taking so that the patient was poisoned. The claim was completely disproved by retained copies of the prescriptions. . . .

Case 3.—Dr. A. treated Mr. B. for a fracture of a finger. He reduced the fracture and immobilized the part. He recommended an x-ray, which was refused by the patient because of the expense. Dr. A. then wrote Mr. B. a letter, advising an x-ray examination and emphasizing the need for such a procedure. A carbon copy of the letter was filed with the medical record. Mr. B. thereafter returned only once to Dr. A.'s office. Dr. A. later wrote, urging Mr. B. to return for further treatment or to seek such treatment elsewhere, and again kept a copy. Several months later Mr. B. sued Dr. A. for malpractice, alleging: that his stiff finger was due to Dr. A.'s negligence; that Dr. A. should have taken an x-ray after reducing the fracture; that he should have instituted active and passive motion, etc. Dr. A.'s records constituted the margin of victory in the case.

These three cases are examples of a large group of instances in which the adequacy of written records has been the deciding factor in the outcome of suits for malpractice. Two additional situations will serve to emphasize the importance of this aspect of the written record.

A young boy received a puncture wound in his thigh caused by a pitchfork and was taken to Dr. A.'s office for treatment. Tetanus antitoxin was recommended but the mother refused to permit its administration and would not sign a statement as evidence of her refusal. Later, Dr. A. wrote her a letter again stressing the need for the recommended procedure and urged her to have it done, if not by him, Dr. A., then by someone else. This letter was sent by registered mail and a return receipt requested, which was placed in the doctor's file along with a complete report of the case. The boy died of lockjaw and suit was instituted against Dr. A. alleging that the boy's death was due to the doctor's negligence in not administering tetanus antitoxin. The doctor's records disproved the allegation and a verdict of not guilty resulted.

The other case involved an orthopedic surgeon who assisted in the treatment of a complicated fracture. The results were not all the patient expected and he brought suit alleging a failure to perform a number of acts, which, he contended, a competent doctor specializing in orthopedics would have performed. The insurance carrier insisted that the suit be settled on discovery that the only records of the case maintained by the doctor consisted of the name of the patient, the dates of visits, and the amount of the fee for which the patient was billed.

### Record as Index to Quality of Medical Care

The fact that incomplete records may reflect incompetency is graphically illustrated by the following case involving a hospital patient.[3] A 17-year-old girl was admitted to a hospital with a diagnosis of ulcera-

Member, Committee on Medicolegal Problems, American Medical Association, and Member, Virginia State Bar.

tive colitis apparently made at another institution. After a 15-day stay in the hospital she died, and the primary cause of death given on the death certificate was circulatory collapse. A study of the hospital record of the patient revealed no evidence of an admission physical examination. There were no progress notes, there was no adequate explanation of the determination as to the primary cause of death, and the treatment given the patient was found to be unusual, to put the matter mildly. It consisted essentially of large amounts of fruit juices and colonic irrigations. An investigation of the records of other hospital patients brought to light similar inadequacies. The responsibility for this condition was pinned on the chief of staff. Although he had a license to practice medicine in the state, a bit of probing disclosed that he obtained the license on the basis of forged credentials.

One writer has discussed the clinical record in its relation to the problem of professional liability, or malpractice, as follows [4]:

> I should now like to mention the forensic medical problem which underscores the importance of the clinical record as an indicator of the quality of medical care.
>
> The law requires that the physician have the learning and skill of other physicians in good standing in the same locality and that he use ordinary care and diligence in the application of such learning and skill. As malpractice prophylaxis, the doctor must not only exercise a high quality of medical care, but he should also be able to prove that he has done so. His greatest aid, in this respect, is the clinical record. This should show what was done, when it was done, and it should include a complete recording of all instructions given the patient together with the written history, the record of the results of physical examinations and reports of laboratory examinations, and the progress notes. The physician cannot possibly recall all of these facts after a year or more, but the disgruntled patient is likely to remember (not always accurately) every detail and every word spoken. It is a common human characteristic to remember only that which we wish to remember and to remember what we have heard, not in the context in which it was stated, but in the context of how we interpreted it. Moreover, the patient's vivid recall of the circumstances as he remembers them is liable to sway the average judge or jury when there is a conflict between his and the physician's statements. Juries are also apt to conclude, and perhaps justifiably, that the poor record reflects laxity on the part of the physician and his management of the case.

### Speculations and Alterations

Statements of a speculative or conjectural nature should be incorporated in the written record of a patient only with the complete realization of the possibility that they may make of the record a two-edged sword capable of being used, medicolegally, both against as well as for the physician. Too, if it becomes necessary to alter or change an entry, care should be taken that suspicion is not raised that the record has been "doctored" for ulterior purposes. The original entry had better not be obliterated completely and an explanation for the change, dated and initialed, may serve as evidence of good faith.

### Consent to Operations

The law does not demand, at least in the absence of statute, that a consent to surgery or other form of treatment be in writing to be valid and binding. An oral or implied consent may be just as valid as a written consent. A patient who applies to a physician for the treatment of a sliver in his finger impliedly consents to the removal of the sliver by acquiescing in that procedure. A written authorization or even an express consent in such minor procedures is not customarily obtained, nor is it required by law.

Even with respect to major surgical procedures, oral or implied consent will legally suffice, if the procedure contemplated is a lawful one and if the one giving the authorization is legally qualified to consent. But, as a practical matter, a physician is inviting difficulties if he relies on oral consent where major surgery is contemplated. It is therefore customary to require the patient, or someone on his behalf qualified to do so, to sign a written permit to be retained as a part of the treatment record. Such a permit should clearly describe the procedure to be done and should name the surgeon or surgeons who will do the surgery. A specific, direct, written consent will do much to minimize the possibility of later misunderstandings that might breed a malpractice suit. The physician should be certain, too, that the patient understands fully the contents of the written consent he is signing.

I should like to relate a personal experience of a relatively minor surgical operation. I was admitted to the hospital as a patient of Dr. W., who was to do the surgery. The consent form I was asked to sign did not mention Dr. W., nor did it describe the type of surgery to be done. In broad language, it undertook to authorize any physician to operate who was assigned by the hospital, and furthermore would have authorized that physician to do whatever he decided to be necessary or desirable without the slightest reference to the condition that necessitated the trip to the hospital. It is not an overstatement to say that such a consent form leaves much to be desired, and it may be questioned how much actual protection it affords the surgeon who performed the surgery.

It is obvious that, for a consent to afford protection, the procedure contemplated must be a lawful one. A patient cannot, for example, give a valid consent to a criminal abortion. Serious doubts have also been raised as to the validity of a consent, written or oral, which contemplates a nontherapeutic operation, desired solely for economic reasons, to produce sterility. And again, what is the status of a consent purporting to authorize surgery to change the sex characteristics of the patient? These and similar questions invite fuller comment that perhaps would not be particularly germane to the topic of this assignment. The reference is made here largely to suggest that physicians should not only realize the importance of reducing to written form essential data about his treatment of a patient but also should ponder whether such data, in specific instances, will afford any safeguards even though in written form duly signed and delivered.

Persons who may or may not execute a valid consent to surgery or other form of treatment, and to autopsies, has been adequately defined elsewhere.[5] Assuming, however, that a surgical procedure is serious enough to require written permission, the permission should be carefully obtained if it is to afford maximum protection to the physician in case its validity is subsequently challenged. The execution of the consent permit should be preceded by an explanation, under-

standable to the patient, of the condition necessitating the operation and of the procedure intended to be used to relieve that condition. Some estimate should be made of the probable result, but care should be exercised to avoid a promise of certainty of a cure. Attendant risks need not be stressed unduly, but, if they will be greater than usual, the patient should be apprised of them in such a way as to avoid creating fright. The frankness with which the risks are discussed will depend to a large extent on the individual case and the emotional poise of the patient. If in the opinion of the physician the patient is being asked to take a calculated risk in submitting to a recommended procedure, the patient is entitled to know what those risks are so that he will be able to form an intelligent judgment about the matter.

While the consent form should be specific as to the procedure contemplated, it may be desired to make provision for an extension of surgery in case the need develops during the course of an operation. The usual printed consent form contains such a provision. Here is how one writer has expressed this aspect of a written consent [6]:

> Doctors are not omniscient. All of them realize that, but too many of them forget to say so to their patients. They forget to deal with their diagnoses as opinions. They act as though the opinions were certainties. Surgeons, in cases where they would state doubts freely to another doctor sometimes act as if they knew exactly what they were going to find at operation and get permission only for some single, specified piece of surgery when, properly, they should not only state their opinion and ask permission to do the work it entails, but should also explain that perhaps more or less or different surgery will prove necessary and get permission for the modified treatment. Patients have a right to as definite an opinion from a surgeon as he can give, but they should know that the surgeon is aware of the right they already possess, the right of decision about how much more or less shall be done than, in cases of doubt, the surgeon says he intends to do.
>
> As a corollary of that point, where no emergency exists, surgeons should be cautious and conservative when they think much different or much more extensive surgery is necessary than even their reasonable explanation had made provision for.

If these explanations are desirable, it obviously follows that evidence that the patients have been given should be contained in the physician's record of the case. This evidence can be made a part of the consent form, as suggested by Dr. Woodward,[5] or a separate notation can be included in the record. The important thing is that the physician should be prepared to offer proof if the patient at some later date denies the fact that he was fully informed as to his condition and as to the extent of the surgery recommended.

### Conclusions

Much that has been written here may seem to impose on a physician an unnecessary burden in record keeping. If no law suit eventuates there may be some justification for such a reaction. But, as many writers have pointed out, every case treated is a potential malpractice suit and a wise physician will keep his house in order. Put it in writing, doctor!

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## MEDICOLEGAL ABSTRACTS

**Contracts in Restraint of Professional Practice.**—This was an action by a retiring partner to recover certain accounts receivable of a medical partnership. From an adverse judgment, the plaintiff appealed to the district court of appeals, 1st district, division 2, California.

The plaintiff physician joined the staff of the San Mateo Clinic on January 1, 1940, and became a partner the following year. Partnership agreements were executed in 1941 and again in 1942. The pertinent change in the 1942 agreement, which was to terminate in 1950, was the provision that a retiring partner was entitled to receive a share of the accounts receivable, payable monthly, "only so long as he shall not engage in the practice of the medical profession within the cities of San Mateo, Burlingame, and/or Hillsborough, and that upon so engaging in such medical practice within any of the said cities, his right to any of the unpaid money from the partnership shall automatically cease and terminate." The plaintiff signed this agreement. In 1943, after the plaintiff had entered the military service, a new partnership agreement was executed incorporating the terms of the 1942 agreement. The plaintiff, being absent, did not sign this agreement. Upon being discharged from the military service in 1945, the plaintiff reentered the partnership but no new agreement was executed. The plaintiff merely continued to work under the 1943 agreement until August, 1951, when he left the partnership and opened an office in San Mateo.

The plaintiff alleged that the 1943 agreement was not binding upon him as he had never signed it; that the 1942 agreement, which he had signed, expired in 1950 and therefore was no longer enforceable. Since there was no agreement binding upon him, he argued that he was entitled to his share of the accounts receivable. The defendant partnership, on the other hand, contended that the plaintiff, orally and by his conduct, accepted the 1943 agreement and could not now assert that there was no agreement binding upon him.

The district court of appeals held that the plaintiff's conduct was sufficient to support an inference that he had assented to be bound by the provisions of the 1943 agreement. As a result of this consent and by his immediately commencing to practice in San Mateo upon retiring, he waived any rights he might have had to the accounts receivable as provided in the agreement. The plaintiff had one of two choices. He could retire and not practice in San Mateo, thereby receiving that portion of the accounts receivable to which he was

entitled, or he could practice in San Mateo and thereby forfeit his interest in the accounts receivable. Having chosen the latter, he was not entitled to recover.

It was also contended by the plaintiff that the waiver clause itself was invalid since it provided for a penalty or forfeiture. The law, said the court, does not favor either contracts in restraint of trade or agreements for liquidated damages. The Business and Professions Code, however, permits partners to agree that none of them will compete in a similar business in the same town or a specified part thereof. It also permits the parties to a contract to agree to liquidated damages when the amount of actual damage sustained by a breach thereof would be impracticable or extremely difficult to determine. Whether a covenant is for liquidated damages or for a penalty will be determined in accordance with the facts and circumstances of each case. The amount fixed as liquidated damages must represent a reasonable endeavor to estimate a fair compensation for the loss that may be sustained and must bear some reasonable relation to such loss. The partnership alleged loss of 96 obstetrical cases for which it charged an average of $175 per case. The plaintiff admitted that since his departure from the clinic he had called on it for nearly 205 case histories. Thus it can be seen, said the court, that the clinic in less than two years since the plaintiff's withdrawal had already suffered a loss that may well be equivalent to or greater than the amount of the plaintiff's share in the accounts receivable. There is no way of calculating the future loss that will be suffered through the loss of this group of patients. It is obvious, the court concluded, that the measure selected is reasonably related to the anticipated loss.

On the basis of all the evidence, therefore, the judgment of the trial court in favor of the defendant partnership was affirmed. *Farthing v. San Mateo Clinic, 299 P.(2) 977 (Calif., 1956).*

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## BLOOD TRANSFUSIONS—JEHOVAH'S WITNESSES

What are the legal obligations and liabilities of a physician when a patient, in anticipation of medical or surgical treatment, demands that he not be given a blood transfusion? In effect, the physician, trained and skilled in the science of medicine, is asked to ignore his best medical judgment and accede to the wish or demand of the patient.

In elective procedures where no emergency exists and when the patient is an adult in possession of his faculties, the patient would usually have the lawful right to impose this condition. The physician, in turn, in these circumstances, could elect to accept or refuse the patient for care and treatment. Should the condition be imposed after the physician-patient relationship is established, the physician may lawfully withdraw from the case, providing he advises the patient of his intention to do so and affords the patient an opportunity to obtain the services of another physician.

In an emergency, when the patient or the person legally responsible for him demands that no blood be administered, a more difficult situation exists, because there may be no time available to discuss the medical implications or to withdraw from the case without prejudicing the patient's welfare. In the last analysis, however, it would seem that the patient, as an adult in possession of all his faculties, still has the right to impose the condition. A spouse or legal representative of the adult not in possession of his faculties may communicate the patient's wishes or beliefs to the physician. Such a communication to be binding would have to be made in accordance with demonstrated authority.

The adult patient of sound mind has certain personal rights, among which are the right to life and the right to preserve life in good health by usual and accepted means. Conversely, no one is legally obligated to preserve his life or maintain health by the use of extraordinary or unusual means. Society does not demand that one move from one geographical area to another to enjoy the therapeutic advantages of a different climate, even though in the best opinion of medical science the failure to make such a move will doubtless result in shortened life expectancy. One may elect to refuse surgery or medical advice, or he may choose not to seek the assistance of medicine at all. Such decisions do not impose any legal liability upon him as long as he is not endangering the life or health of others.

Although the courts have not been called upon to decide the respective rights and liabilities of patient and physician in a situation where patient demands that no blood transfusion be administered to him, there have been cases involving a failure by the physician to honor the patient's request. In one case, for example, the patient insisted she not be given a spinal anesthetic. Nevertheless a spinal anesthetic was administered and the patient suffered paralysis. The court held that the anesthesiologist committed an assault by giving the anesthetic and was liable for the harmful consequences of such unlawful act.[1]

### Religious Freedom and Law

Courts have been called on rather frequently to interpret the "freedom of religion" concept of our federal and state constitutions. In these cases, however, it is significant that there was conflict between the personal exercise of a religious belief and the effect of that action on society. In other words, the issue was personal versus collective rights. In a case decided by the Supreme Court of the state of Washington it was contended that the board of regents of a state college was without authority to require that all students undergo x-ray examination of the chest, for the purpose of discovering possible tuberculous infection, as a condition

precedent to registration. A student, as a member of the Christian Science Church, refused to comply. The court quoted the material portion of the First Amendment to the Constitution of the United States, "Congress shall make no law respecting an establishment of religion or prohibiting the free exercise thereof." It also quoted from a like provision of the constitution of the state of Washington. It then pointed out that religious freedom embraces two concepts, freedom to believe and freedom to act. The first, according to the court, is absolute, but not the second. Conduct remains subject to regulation for society's protection. This freedom, said the court, can be restricted to prevent grave and immediate danger to interests that the state may lawfully protect. Because the public interest threatened was the health of all students and employees of the university, the court held that the school requirement was necessary for the protection of others.[2]

Other cases have involved saluting the flag[3] and compulsory vaccination.[4] Another case involved the indictment of a member of the Mormon Church for polygamy. The defense in this case was predicated on religious belief and freedom of religion. The Supreme Court of the United States said, "Laws are made for the government of actions, and while they cannot interfere with mere religious beliefs and opinions, they may with practices."[5]

### Religious Freedom and Medical Treatment

Personal, lawful action based on religious belief, which does not affect the health or welfare of society and does not disrupt society's machinery of government, is a right of citizenship. It may be reasonably concluded that an individual may lawfully forego therapy that is contrary to his religious principles as long as he does not thereby endanger the health and welfare of others by his action.

In case of emergency in which the physician cannot be certain that the patient is in full possession of his faculties or that another person has authority to act for the patient, he should proceed with caution from both the medical and legal points of view. Such consultation as time permits should be sought. Complete records should be maintained. The request of the patient should be reduced to writing and witnessed if at all possible. In event the request cannot be reduced to writing because of time or other factors, a witness should be obtained who may observe and if necessary describe the facts as they existed. The burden is on the physician to insure that evidence of the patient's condition and the circumstances under which the demand not to give a blood transfusion was imposed are carefully and fully preserved.

When the patient is a child and the parent rejects a transfusion the legal position of the physician is not too clear. In an elective procedure, he may, of course, refuse to accept the case under the conditions imposed. The parent and the child-patient would then have the responsibility of seeking another to give medical or surgical care.

If, however, it is impossible for the physician to withdraw without danger to the patient, it would seem that he is obligated to respect the demands of the patient's parents to the greatest extent possible. That is to say, he should proceed, respecting the demand not to give a transfusion. If during the procedure the administration of blood becomes necessary to save life the physician is faced with a decision on his own, according to his judgment and conscience. On one hand, the demand of the parent may well be the wish of the child-patient; perhaps the patient might choose to die rather than violate a religious principle. On the other hand, the doctor has no way of ascertaining in such an emergency that the minor is, indeed, of such religious persuasion.

If the doctor did give the minor a blood transfusion, contrary to the wish or order of the parent, it is conceivable that the child might express gratitude upon recovery. However, it is just as possible that the child through his parents might sue the doctor for assault. If the charge of assault were sustained, the damage incurred would have to be predicated on having saved the life of the child. It may be doubted that any more than nominal damages would be awarded for such an assault.

In an Illinois case involving an 8-day-old infant who had erythroblastosis fetalis, the problem was solved by having the district attorney bring a proceeding to determine the fitness of the baby's parents, who were Jehovah's Witnesses. On proper petition and hearing, the parents, who refused to permit medical treatment, which included transfusion, were declared to be unfit and the court appointed a guardian for the child. The guardian in turn authorized treatment, the child was given a transfusion, and, it is reported, responded favorably and lived.[6]

When in the medical care of a minor it is the considered opinion of medicine that a blood transfusion is essential to save life, it is well for the attending physician to seek the advice and assistance of the local prosecuting attorney and available child welfare agencies to determine whether a guardian should be appointed.

Whether a patient be adult or minor, full and complete records must be made and preserved; consultation should be sought whenever possible. Evidence must be preserved showing that the patient making the request or his representative was or appeared to be in full possession of his faculties.

#### References

1. *Woodson* v. *Huey*, 261 P (2d) 199 (Okla. 1953). Malpractice: Surgeon's Liability for Acts of Anesthesiologist, Medicolegal Abstracts, J. A. M. A. **159:**1235 (Nov. 19) 1955.

2. *State* v. *Armstrong*, 239 P (2d) 545 (Wash. 1952).

3. *Vonnegut* v. *Baun*, 184 NE 677 (Indiana).

4. *West Virginia State Board of Education* v. *Barnette*, 63 S. Ct. 1178; 319 U. S. 624.

5. *Reynolds* v. *United States*, 98 U. S. 145; 25 Law Ed. 244.

6. *People ex rel Wallace* v. *Labrenz*, 104 NE (2d) 769 (Ill. 1952). Blood Transfusion: Court's Right to Order, Medicolegal Abstracts, J. A. M. A. **152:**83 (May 2) 1953. See also *Morrison* v. *State* 252 SW (2d) 97 (Mo. 1952). To the contrary see: In re Hudson, 126 P (2) 765 (Wash. 1942).

# MEDICAL NEWS

## ARKANSAS

**Neuropsychiatric meeting in North Little Rock.**—The ninth annual Institute in Psychiatry and Neurology will be held at the Veterans Administration Hospital, North Little Rock, Feb. 28–March 1. Participants will include Dr. Francis J. Braceland, Hartford, Conn., president, American Psychiatric Association; Esther L. Brown, Ph.D., Boston University School of Nursing; Dr. Donald A. Covalt, New York University–Bellevue Medical Center, New York City; Dr. Iago Galdston, New York Academy of Medicine, New York City; William E. Gordon, Ph.D., George Warren Brown School of Social Work, Washington University, St. Louis; E. Lowell Kelly, Ph.D., University of Michigan, Ann Arbor; Dr. Louis A. Krause, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore; Dr. L. H. McDaniel, Tyronza; Dr. William S. Middleton, chief medical director, Veterans Administration, Washington, D.C.; Earl G. Planty, Ph.D., University of Illinois, Urbana; Mr. Winthrop Rockefeller, Little Rock; Drs. Lewis R. Wolberg and Harold G. Wolff, New York City. Dr. Braceland will present the principal address at the dinner session Thursday evening. On Wednesday there will be workshops in clinical psychology, psychiatric social work, and psychiatric nursing. Dr. Harold W. Sterling, manager of the VA Hospital, cordially invites professional personnel to attend this institute; registration is without charge.

## CALIFORNIA

**Conference in Ophthalmology.**—Stanford University School of Medicine will present the annual postgraduate conference in ophthalmology March 18-22. Registration, limited to 30, will be open to physicians who limit their practice to the treatment of diseases of the eye or of the eye, ear, nose, and throat. Instructors will be Drs. David L. Bassett, Stanford; Jerome W. Bettman, San Francisco; Max Fine, San Francisco; Earle H. McBain, San Rafael; Arthur J. Jampolsky, San Francisco; and Dohrmann K. Pischel, San Francisco. Information may be obtained from the Dean, Stanford University School of Medicine, 2398 Sacramento St., San Francisco 15.

**University News.**—The College of Medical Evangelists, Loma Linda–Los Angeles, announces that Dr. Clarence E. Stafford, Los Angeles, has been appointed acting chairman of the division of surgery. Drs. Howard S. Downs, Glendale, and Robert V. Shearer, Los Angeles, have been named executive secretaries of the departments of anesthesiology and ophthalmology respectively. Dr. Morton M. Woolley, Los Angeles, is a new instructor in the division of surgery.—Dr. Leon Goldman was recently appointed associate dean of the University of California Medical School, San Francisco, and Drs. Robert H. Crede and Malcolm S. Watts were named assistant deans. All three will continue to serve in their previous positions: Dr. Goldman as chairman, department of surgery, Dr. Crede as associate professor of medicine, and Dr. Watts as assistant clinical professor of medicine.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

## DISTRICT OF COLUMBIA

**Course on Radioiodine.**—A course in the "Diagnostic Use of Radioiodine ($I^{131}$)" will be given March 18-22 at Georgetown University Medical Center, Washington, D.C. This course, open to authorized physicians, will meet Atomic Energy Commission qualifications for diagnostic $I^{131}$. Information may be obtained from Dr. Benedict J. Duffy Jr., Georgetown University Hospital, Washington 7, D.C.

## FLORIDA

**Refresher Course.**—Mediclinics, a postgraduate refresher course, will be held in Fort Lauderdale, March 4-14, under the sponsorship of the Florida Academy of General Practice. The American Academy of General Practice has certified the course for 32 hours of formal postgraduate study in category 1. Seven luncheon meetings have been scheduled; attendance is optional, and the cost of each is $2.50. Tuition fee for the course is $50, payable in advance. The faculty will leave Chicago on Saturday, March 2, on the Pennsylvania Railroad train "Southwind," arriving in Fort Lauderdale on Sunday. Those desiring reservations on that train should consult their local ticket agent or Mr. J. R. Brown, 720 Rand Tower, Minneapolis.

## ILLINOIS

### Chicago

**Symposium on Cardiovascular Disease.**—"Doctor, Have You Made a Mistake?" is the title of a symposium on misdiagnoses of cardiovascular disease to be presented by the Chicago Heart Association at the Palmer House, March 5, 8 p. m. Presentation and discussion of four significant errors will be offered by experts. The special discussant will be Dr. A. Carlton Ernstene, chairman, division of medicine, Cleveland Clinic, Cleveland. A telephone will be available for physicians at the meeting, RA 6-7500.

**Lectures on Growth of Medicine.**—In its series, "The Growth of Medicine," Northwestern University Medical School will present the following lectures in room 641 of the Ward Memorial Building, 303 E. Chicago Ave., from 5 to 6 p. m.:

March 5, Medicine Extends Its Eyes (development and use of the microscope since the time of Galileo), Leslie B. Arey, Ph.D., professor of anatomy, emeritus, Northwestern University Medical School.

March 12, Development of Our Knowledge of Neurology, Lewis J. Pollock, professor of neurology and psychiatry, emeritus, Northwestern University Medical School.

## MICHIGAN

**Annual Symposium on Trauma.**—The Michigan Academy of General Practice will present its fourth annual symposium for the generalist, with the co-sponsorship of the Lederle Laboratories Division of the American Cyanamid Co., at the Olds Hotel, Lansing, March 6. Five hours of category-1 credit will be allowed for attendance. The luncheon speaker will be Dr. Austin Smith, Editor of THE JOURNAL of the American Medical Association, whose subject will be "What the Future Holds for General Practice." Other presentations by out-of-state speakers include:

Trauma to the Head and Spine, Kenneth H. Abbott, Columbus, Ohio.
Trauma to the Chest, E. J. Beattie Jr., Chicago.
Trauma to the Abdomen, John H. Powers, Cooperstown, N. Y.
Trauma to the Extremities, David M. Bosworth, New York.
Physical Rehabilitation Following Trauma, Allen S. Russek, New York.
Psychiatric Rehabilitation Following Trauma, Harry H. Wagenheim, Philadelphia.

## NEW YORK

**Sesquicentennial Celebration.**—The Columbia County Medical Society observed its sesquicentennial, Dec. 5, 1956, with a program in the Hudson High School Auditorium in Hudson. After an address of welcome by the president, Dr. Carl G. Whitbeck, Hudson, Dr. Joseph P. Gold, Hudson, presented scrolls to the following physicians for 30 years or more of active membership in the society: Lawrence J. Early, John L. Edwards, Harry A. Pattison, Clark G. Rossman, all of Hudson; Frank C. Maxon, Chatham; and Louis Van Hoesen, Copake. Under the sponsorship of the council committee on public health and education of the Medical Society of the State of New York, with the cooperation of the New York State Department of Health, Dr. Louis H. Bauer, New York City, past-president of the American Medical Association and secretary-general of the World Medical Association, delivered the address, "The Medical Profession and Voluntary Health Insurance."

### New York City

**Presentation of the Van Slyke Award.**—At the meeting of the New York Metropolitan section of the American Association of Clinical Chemists, Feb. 26, 8:30 p. m., at Mount Sinai Hospital, 99th Street and Fifth Avenue, the first Van Slyke Award in Clinical Chemistry will be presented to Donald D. Van Slyke, Ph.D., himself. Dr. Van Slyke will deliver an address on "Some Phases of Oxygen Physiology," which will describe his research in this field. All those interested are invited to attend.

**Appoint Professor of Obstetrics and Gynecology.**—Dr. Gordon Watkins Douglas, who has been on the staff of New York University College of Medicine since 1949, has been appointed professor and chairman of the department of obstetrics and gynecology of New York University College of Medicine, a unit of New York University–Bellevue Medical Center. He succeeds Dr. William E. Studdiford, who became professor emeritus after 21 years of service to his alma mater. When Dr. Studdiford entered New York University College of Medicine as a student in 1918, his father, the late Dr. William E. Studdiford Sr., was professor and chairman of the department in which his son later served as chairman for 19 years.

**Bookbinding Service.**—The Institute for the Crippled and Disabled, rehabilitation center at 23rd Street and First Avenue, announces that the service of uniform binding of medical volumes for doctors' offices, libraries, schools, and other professional institutions has become available. The bookbinding will be done by handicapped students engaged in leathergoods manufacturing training in the vocational phase of their total rehabilitation programs at the institute. Full leather, half leather, buckram, and leatherette bindings in all colors and qualities of materials are available. All work is being done on a custom order basis with the exact specifications of the purchaser followed in detail. The institute will also provide a consultative service on the decoration and styling of the bookbinding. Information may be obtained and orders placed by addressing the Medical Bookbinding Service at the Institute, 400 First Avenue, New York 10, telephone OREgon 9-0100.

**Hospital Observes Diamond Jubilee.**—The New York University–Bellevue Medical Center Convocation, March 4-5, in commemoration of the diamond jubilee of University Hospital, will have as its theme "The Hope of Mankind—Health and Peace." The convocation panels will be concerned with medicine and the role it serves in man's struggle for a better way of life. University Hospital, organized in 1882 as the New York Post-Graduate Medical School and Hospital, joined New York University in 1948, merging in December of that year with the newly formed New York University–Bellevue Medical Center and thereby becoming known as New York University Post-Graduate Medical School and University Hospital.

The hospital is a part of a multimillion-dollar medical center development program, in which the Institute of Physical Medicine and Rehabilitation, the Henry W. and Albert A. Berg Institute for Experimental Physiology, Surgery and Pathology, and the Medical Science Building are completed and in full operation. The students' Hall of Residence was scheduled to be placed in operation this month and Alumni Hall and lecture rooms will be opened in September. The new 20-story hospital to replace the present University Hospital will complete the medical center development program.

## NORTH CAROLINA

**Conference on Handicapped Children.**—The third North Carolina Conference on Handicapped Children will be held at the University of North Carolina School of Medicine, Chapel Hill, Feb. 28-March 1. The keynote speech will be given by Wendell Johnson, Ph.D., professor of speech pathology, University of Iowa, Iowa City. Other speakers will include Jon Eisenson, Ph.D., Speech and Hearing Clinic, Queens College, New York; William G. Hardy, Ph.D., Johns Hopkins

School of Medicine; Herbert K. Cooper, D.D.S., director, Lancaster (Pa.) Cleft Palate Clinic; and Dr. Orvis C. Irvin, professor of psychology, University of Iowa. The conference is sponsored by the coordinating committee for handicapped children, North Carolina Health Council; the North Carolina Speech Therapists Association; and the Nemours Foundation. All persons interested in the problems of handicapped children are invited to attend.

## OHIO

**Course in Electrocardiography.**—Dr. Leslie H. French, Prince Georges General Hospital, Cheverly, Md., will conduct the annual course in practical electrocardiographic analysis at Columbus, March 4-8. Eligible physicians interested in participating in this course should communicate with Dr. Oscar F. Rosenow, White Cross Hospital, Columbus 8.

**Course on Obstetrics and Gynecology.**—The Frank E. Bunts Educational Institute, affiliated with the Cleveland Clinic Foundation, will present a postgraduate continuation course in obstetrics and gynecology, March 21-22. The Wednesday sessions will be devoted to "Advances in Obstetric Care" and the Thursday sessions to "Gynecological Bleeding." The faculty of the institute will be assisted in the presentation of this course by guest speakers including Drs. Marion E. Black, assistant clinical professor of obstetrics and gynecology, Robert L. Faulkner, associate professor of obstetrics and gynecology, and Irving Rothchild, associate professor of obstetrics and gynecology, of Western Reserve University School of Medicine, Cleveland; William S. Kroger, clinical associate professor of gynecology, Chicago Medical School; and Norman F. Miller, professor of obstetrics and gynecology, University of Michigan Medical School, Ann Arbor. Registration fee for the course is $15, except for interns, residents, and members of the armed forces in uniform, who will be admitted free. Please address the Registrar, Frank E. Bunts Educational Institute, 2020 E. 93rd St., Cleveland 6.

**Academy's Centennial Exposition.**—The Academy of Medicine of Cincinnati cordially invites all physicians, their families, and their patients to its 100th birthday party, Feb. 27–March 5. A health museum and exposition in the Cincinnati Music Hall will offer 175 health and scientific exhibits, representing medicine, hospitals, research centers, public health, nursing, pharmacy, and industry. There will be an atomic energy exhibit from the American Museum of Atomic Energy, entitled "Atoms for Peace." "Juno," an activated manikin, loaned by the Dominican Republic, will demonstrate blood vessels, bones, and organs of the body. Drs. Paul D. White, Boston, and Walter C. Alvarez, Chicago, will be among the guest speakers. At the centennial convocation, March 5, the convocation address will be given by Sir Edward Appleton, Nobel laureate, Edinburgh. Civic leaders, officials of both the national and state medical associations, and government dignitaries will take part in the ceremonies. Prof. Reginald McGrane, Ph.D., chairman, department of history, University of Cincinnati, has prepared a 100-year history of the academy, entitled "The Doctor's Forum." The *Cincinnati Journal of Medicine* also is preparing a special centennial edition.

**Cancer Seminar.**—The third annual Seminar in Cancer will be presented by the medical staff of the Huron Road Hospital (13951 Terrace Rd., Cleveland) Feb. 26-27. The fee, $20, includes the seminar, two luncheons, and a banquet. Interns and residents are invited to the daytime sessions and luncheons without charge. A skin clinic is scheduled for Tuesday at 12:15 p. m., and a panel discussion, "Malignancies of the Female Reproductive System," for 3:45 p. m. On Wednesday at 4 p. m. there will be a panel discussion on cancer of the lung. This will be moderated by Dr. Charles S. Cameron, dean, Hahnemann Medical College and Hospital, Philadelphia, and past executive director, American Cancer Society, who will also deliver the banquet address, "Cancer—1957," Wednesday, 8 p. m. Other presentations by out-of-state speakers will include:

Treatment of Cancer of the Cervix with Radiation, Juan A. del Regato, Colorado Springs, Colo.
Malignant Tumors of the Head, Face, and Neck, Oliver H. Beahrs, Rochester, Minn.
Cutaneous Neoplasms, George C. Andrews, New York.
Ovarian Tumors, Clyde L. Randall, Buffalo.
Recognition and Treatment of Tumors of the Urinary Bladder, Victor F. Marshall, New York.
Trends in Cancer Research, John B. Trunnell, Galveston, Texas.
Histopathologic Studies of the Bronchial Mucosa, Oscar Auerbach, East Orange, N. J.
Malignant Tumors of the Lung, Richard H. Overholt, Boston.

## PENNSYLVANIA

**Registration Required for Ionizing Radiation Equipment.**—Pursuant to its recent announcement that all owners, operators, or handlers of ionizing radiation machines or radioactive material in Pennsylvania must register with the department as required by its radiation protection regulations, the Pennsylvania Department of Health, Harrisburg, has sent more than 35,000 registration forms to all known or potential users of ionizing radiation equipment or materials in the state. The department points out that greater use of ionizing radiation equipment and of radioactive material has increased the potential danger of overexposure of persons subjected to this type of radiation and has become a public health concern.

**Personal.**—Dr. Robert D. Dripps Jr., chairman, department of anesthesiology, University of Pennsylvania School of Medicine, was elected a director of the American Board of Anesthesiology at a meeting of the board in Coronado, Calif., Oct. 24. Dr. Dripps fills the vacancy created by the resignation of Dr. Meyer Saklad of Providence, R. I.——An award of $1,000 has been presented by the Society of Cosmetic Chemists to Dr. Walter B. Shelley, associate professor of dermatology, University of Pennsylvania School of Medicine, for his work on the apocrine and eccrine glands. The award, established in 1955, is given annually to the author "whose recent papers offer the greatest potential advance in cosmetic science."——Dr. Harry Shubin re-

cently presented a paper on "Current Status of Therapy for Tuberculosis"—at the Forlanini Institute in Rome, Italy, and a paper on "A New Simple Method of Skin Testing for Tuberculosis, Histoplasmosis, Blastomycosis, and Coccidiomycosis" at Cologne, Germany, where he was also a collaborator on the panel on tuberculosis presented at the fourth International Congress on Diseases of the Chest.

## TEXAS

**Course on Poliomyelitis.**—Baylor University College of Medicine, Southwestern Poliomyelitis Respiratory Center, and the Jefferson Davis Hospital, Houston, in cooperation with the National Foundation for Infantile Paralysis, Inc., will hold their fourth postgraduate course for physicians, nurses, medical social service workers, and physical and occupational therapists, Feb. 25–March 1. The course on "Practical Management of Poliomyelitis and Principles of Rehabilitation" will cover complete care of persons with poliomyelitis, with emphasis on the patient with severe involvement, the effective coordination of services, and the principles of rehabilitation. Details may be obtained from Dr. William A. Spencer, Medical Director, Southwestern Poliomyelitis Respiratory Center, Education Office, 1300 Kenwood Lane, Houston.

**Symposium on Cancer Research.**—The 11th annual Symposium on Fundamental Cancer Research will be held March 7-9 at the University of Texas M.D. Anderson Hospital and Tumor Institute, Texas Medical Center, Houston. The general topic will be "Viruses and Tumor Growth." The session Friday morning will have as chairman Dr. Albert B. Sabin, of Cincinnati. Presentations by out-of-state speakers will include:

Pathology of Virus Neoplasia, Ernest W. Goodpasture, Armed Forces Institute of Pathology, Washington, D. C.

Genetic, Hormonal, and Age Factors in Susceptibility and Resistance to Tumor-Inducing Viruses, Howard B. Andervont, Sc.D., National Cancer Institute, Bethesda, Md.

Immunological Factors in Viral Infections, Edwin H. Lennette, California State Department of Public Health, Berkeley.

Factors Influencing Proliferation of Viruses, Joseph L. Melnick, Ph.D., Yale University School of Medicine, New Haven, Conn.

Factors Influencing Proliferation of Tumor-Inducing Viruses, George O. Gey, John Hopkins Hospital, Baltimore.

Transmission of Tumor-Inducing Avian Viruses Under Natural Conditions, Ben R. Burmester, Ph.D., U. S. Department of Agriculture, East Lansing, Mich.

Enhancement of Susceptibility to Viruses in Neoplastic Tissues, Hilary Koprowski, Lederle Laboratories, Pearl River, N. Y.

Virus Range of Stable and Pure-Line Cell Strains, Jerome T. Syverton and Leroy C. McLaren, Ph.D., University of Minnesota Medical School, Minneapolis.

Oncolytic Properties of Viruses, Alice E. Moore, Sloan-Kettering Institute for Cancer Research, New York City.

Cell-Free Transmissions of Leukemia, Ludwik Gross, VA Hospital, Bronx, N. Y.

Isolation and Identification of Tumor-Inducing Viruses, Joseph W. Beard, Duke University School of Medicine, Durham, N. C.

Host-Virus Relationship in Tumor-Inducing Viruses, W. Ray Bryan, Ph.D., National Cancer Institute, Bethesda, Md.

Carcinogens and Viral Infections, Francisco Duran-Reynals, Yale University School of Medicine, New Haven, Conn.

Action of Viruses on Cells, Earl A. Evans Jr., Ph.D., University of Chicago.

Potential Significance of Nucleic Acids and Nucleoproteins of Specific Composition in Malignancy, Wendell M. Stanley, Ph.D., University of California, Berkeley.

Viruses as Transducing Agents and Their Potential Significance in Cancer, Joshua Lederberg, Ph.D., University of Wisconsin College of Agriculture, Madison.

The seventh annual Bertner Foundation award and Bertner Lecture will be presented Friday evening.

## GENERAL

**Meeting of Medical Group Psychoanalysts.**—The Society of Medical Group Psychoanalysts will hold their first scientific meeting March 6, 8:30 p. m., at the New York Academy of Sciences, 2 E. 63rd St., New York City. The society is open for charter membership. Those interested may write to Dr. Benjamin Wassell, 49 E. 78th St., New York 21, acting secretary.

**Council for Exceptional Children.**—The International Council for Exceptional Children announces an international meeting in Pittsburgh, April 23-27, with the joint sponsorship of the Pennsylvania federation of the council. The meeting will be held at the Penn-Sheraton Hotel. Information may be obtained from the executive secretary, Mr. Harvey Z. Wooden, 1201 16th St., Washington 6, D. C.

**Research in Muscular Dystrophy.**—A five year, $250,000 research project, sponsored by the University of Texas Medical Branch at Galveston, Texas, and the National Muscular Dystrophy Research Foundation, Liberty, Texas, will provide for coordination of research in various fields. Dr. Arnold H. Nevis, Cambridge, Mass., has assumed duties as coordinator of the research unit. The medical branch also is setting up a muscular dystrophy clinic in Galveston.

**Accidental Drowning.**—According to the Metropolitan Life Insurance Company, most of the 1,200 victims who each year lose their lives in accidents involving small boats are in the 20-24 age group. Among the Metropolitan's industrial policyholders, nearly three out of every five insured persons who drowned were fishing; one-fourth of the victims were cruising, rowing, or canoeing for pleasure; one-tenth were duck hunting; and an almost equal proportion were playing on rafts (practically all boys under 15).

**Fellowships in Cardiology.**—The department of cardiology, St. Michael's Hospital, Newark, N. J., will have available, beginning July 1, one clinical trainee fellowship and one research trainee fellowship in cardiology. Both fellowships are recognized by the National Heart Institute and are credited toward one year of residency in internal medicine. Applicants must be U. S. citizens and must have completed at least two years of an approved residency in internal medicine. Application should be sent to Dr. Nicholas A. Antonius, director, Department of Cardiology, St. Michael's Hospital, 306 High St., Newark, N. J.

**Caribbean Conference on Mental Health.**—The first Caribbean Conference on Mental Health will be held in Aruba, Netherlands Antilles, March 14-19. The conference, organized by the Aruba Society for Mental

Health, will have as its theme "Constructive Mental Hygiene in the Caribbean." The chairman will be Dr. John R. Rees, London, director, World Federation for Mental Health. Topics of discussion will include "Mental Health Problems in the Caribbean," "The Alcohol Problem," "Family and School Relationships," and "What Is Mental Health?" A study will be made of the possibilities of organizing a Caribbean Federation of Mental Health Societies.

**Hospital Associations Meet in Chicago.**—The annual convention of the National Association of Methodist Hospitals and Homes will convene at the Palmer House, Chicago, Feb. 26-28. Panel discussions have been scheduled on "Administrative Problems" and "Medical and Health Services." On Thursday noon, the luncheon speaker will be Dr. Benjamin Boshes, chairman, department of neurology and psychiatry, Northwestern University Medical School, Chicago, whose subject will be "The Role of the Psychiatrist in a Hospital or Home." The association will meet jointly on Thursday evening and Friday with the American Protestant Hospital Association, which has scheduled its meeting at the Palmer House, Feb. 27-March 1.

**Surgeons Meet in Seattle.**—The American College of Surgeons will hold a sectional meeting at the Olympic Hotel, Seattle, Feb. 28–March 2. Dr. George A. Falkner, Walla Walla, Wash., president, Washington chapter, will preside over the dinner program on Wednesday evening, Feb. 27, when the speakers will be Dr. F. John Lewis, Minneapolis, whose topic will be "A Super-radical Mastectomy for Carcinoma of the Breast," and Dr. Paul R. Hawley, Chicago, director of the college, who will discuss "The Position of the College upon Current Problems of Medical Practice." Symposiums have been scheduled on amputations, surgical pathology of special interest to the ophthalmologist, trauma, hypothermia in cardiac surgery, and cancer. The Friday afternoon program includes panels on incontinence in the female, vascular grafts vs. endarterectomy, and biliary tract surgery.

**Meeting on Forensic Medicine.**—The American Academy of Forensic Sciences will hold its annual meeting at the Drake Hotel, Chicago, Feb. 28–March 2. On Thursday the subject for discussion will be "Traffic Accidents." Dr. Maier I. Tuchler, San Francisco, will present personality factors; Dr. Alexander S. Wiener, Brooklyn, biological factors; Dr. Richard Ford, Boston, pathological patterns; and Mr. Erle Stanley Gardner, Temecula, Calif., "Confessions of a Cross Examiner." "Implications of the Durham Case" will be discussed Friday by Dr. Manfred S. Guttmacher, Baltimore, Dr. Val B. Satterfield, St. Louis, and Fred E. Inbau, LL.M., Chicago. Section meetings will be held Friday and Saturday mornings in the fields of forensic pathology, forensic psychiatry, forensic toxicology, jurisprudence, questioned documents, criminalistics, and forensic immunology.

**Essay Contest.**—The Mississippi Valley Medical Society announces an essay contest for unpublished papers on any subject of general medical or surgical interest, including medical economics and education. Contributions are accepted only from physicians who are members of the American Medical Association and who are residents and citizens of the United States. Manuscripts, not exceeding 5,000 words, should be submitted in five complete copies. The winner will receive a cash prize of $100, a gold medal, and an invitation to address the annual meeting of the Mississippi Valley Medical Society at the Hotel Sheraton-Jefferson, St. Louis, Sept. 25-27. Essays must be in the office of the secretary of the society not later than May 1. Details may be secured from Dr. Harold Swanberg, Secretary, Mississippi Valley Medical Society, 209-224 W. C. U. Building, Quincy, Ill.

**Residency in Anesthesiology.**—The Salt Lake Veterans Administration Hospital, in cooperation with the University of Utah, Salt Lake City, has inaugurated a VA career residency in anesthesiology. Residents receive regular VA salary (beginning at $5,915 to $8,990, depending on experience) and agree to remain with the VA for a specified time following their residency. While in the VA service they will be entitled to the usual ingrade salary increases and other benefits. In addition to hospital experience in the VA hospital, residents also rotate through other affiliated teaching hospitals at the University of Utah. Lectures in basic sciences and anesthesia problems are given by the faculty of the University of Utah. This position is currently filled, but applications for the next vacancy, July 1, 1957, are being received. For information contact Dr. Carter M. Ballinger, Director, Division of Anesthesiology, University of Utah, Salt Lake City.

**Dedicatory Issues of Journals.**—The December *Bulletin of the New York Academy of Medicine* is dedicated to the observance of the centennial of the birth of Sigmund Freud. It contains the papers delivered at a meeting in commemoration of the 100th anniversary of the birth, which was held in New York City April 20, 1956 (THE JOURNAL, April 14, page 1337).—The December issue of the *American Review of Tuberculosis and Pulmonary Diseases* is dedicated to Dr. J. Burns Amberson, professor emeritus of medicine, Columbia University College of Physicians and Surgeons, New York City. Reprinted in the issue is the J. Burns Amberson lecture, "The Chest Service at Bellevue Hospital: A Better Mouse Trap," which was delivered by Dr. James J. Waring, Denver, under the sponsorship of the Bellevue Hospital chest service. The lecture will be delivered annually at the meeting of the National Tuberculosis Association and the American Trudeau Society, of which Dr. Amberson is a past-president.

**Scholarships in Education of the Blind.**—The New York Institute for the Education of the Blind offers scholarships to young graduates of American colleges who wish to enter the field of the education of handicapped children. Awards (for one academic year) will consist of board and room at the New York Institute for the Education of the Blind and full tuition at one of the universities in the Greater City. Scholarships may be renewed for the second year—or they may be

cancelled at the end of the first term if the trainee's college or internship work is poor or if he displays inaptitude or lack of interest. The candidate must have secured a college degree from a standard college; must have sufficient funds, in addition to the scholarship award, to spend a year of graduate study in New York City; and must give evidence of his willingness to spend some time teaching in that field on completion of his training program. Candidates for kindergarten, nursery school, and elementary school will be given preference. Applications should be filed by April 15.

**Prize in Obstetrics and Gynecology.**—The American Association of Obstetricians and Gynecologists announces its foundation prize ($500). Eligible contestants include only interns, residents, or graduate students in obstetrics and gynecology and persons with an M.D. degree, or a scientific degree approved by the prize award committee, who are practicing or teaching obstetrics or gynecology or who are engaged in research in these fields. No fellow of the association shall be eligible to compete for this prize. Manuscripts (limited to 5,000 words) must be presented under a nom de plume, which shall in no way indicate the author's identity, to the president of the foundation, together with a sealed envelope bearing the nom de plume and containing a card showing the name and address of the contestant. Three copies of manuscripts and illustrations entered must be in the hands of the president of the foundation before April 1, 1957. Inquiries should be addressed to Dr. E. Stewart Taylor, University of Colorado School of Medicine, 4200 E. Ninth Ave., Denver.

**Fellowships in Poliomyelitis.**—The National Foundation for Infantile Paralysis announces that applications for postdoctoral fellowships submitted before March 1 will be considered in May. The next deadline for applications will be Sept. 1, for consideration in May, 1958. Postdoctoral fellowships are available in rehabilitation, psychiatry, orthopedics, management of poliomyelitis, preventive medicine, and for postdoctoral training in research and/or academic medicine. In addition to a monthly stipend ($3,600-$6,000 annually, depending on individual needs and marital status of the applicant) the foundation arranges for compensation to the institution. For a full academic program, tuition and fees are paid and for other programs a sum not to exceed $1,250 a year, including tuition. Partial fellowships are available for qualified veterans to supplement veteran educational benefits. For information write: Division of Professional Education, National Foundation for Infantile Paralysis, 120 Broadway, New York 5. (After March 1, write to the new address of the foundation, 301 E. 42nd St., New York.)

**Anesthesia Memorial Foundation.**—At the annual banquet of the American Society of Anesthesiologists, Oct. 11, 1956, announcement was made of the incorporation of the Anesthesia Memorial Foundation. One of its functions will be the administration of a resident's loan fund. Dr. Lloyd E. Larrick, Cincinnati, presented to the foundation $500 on behalf of the Ohio Society of Anesthesiologists. Mr. Joseph K. Dennis, of the Joseph K. Dennis Co., administrators of the ASA Group Health and Accident Insurance policies, presented a check in the amount of $200 and stated that his company expected to contribute regularly in the future. The foundation will be administered by a self-perpetuating board, the original trustees of which will be Drs. John S. Lundy, Rochester, Minn., chairman; Urban H. Eversole, Boston; Arthur William Friend, Akron, Ohio; Charles F. McCuskey, Los Angeles; Stevens J. Martin, Hartford, Conn.; and Brant B. Sankey, Cleveland; and Mr. John S. Lansdale, Cleveland. Contributions to the Anesthesia Memorial Foundation should be made payable to the foundation and sent to: Dr. John S. Lundy, 102-110 Second Ave., S. W., Rochester, Minn.

**Certification in Sanitary Engineering.**—The American Sanitary Engineering Intersociety Board, Inc., recently received its first application for a certificate of special knowledge in sanitary engineering. The Intersociety Board announces that all certified sanitary engineers will be carried on a roster to be known as the American Academy of Sanitary Engineering. The basic requirements for certification are registration as a professional engineer, graduation from a college of engineering, and at least eight years of sanitary engineering experience. Applicants with unusually high qualifications and at least 15 years of experience may be considered for certification without examination, if the applications are filed before July 1. All applicants must pay an application fee of $10 plus a $25 examination fee. The Intersociety Board is sponsored by the American Public Health Association, American Society of Civil Engineers, American Society of Engineering Education, American Water Works Association, and Federation of Sewage Works Associations. The office of the secretary of the board, Mr. Francis B. Elder, is in the Engineering Societies Building, 15th Floor, 33 W. 29th St., New York 18.

**Study on Drownings.**—A nationwide study of drownings, recently completed by Bramwell W. C. Gabrielsen, associate professor of education at the University of Georgia, disclosed that, although the most likely places for death on the water are lakes, rivers, and ponds, such accidents happen in unusual places, including bathtubs, wells, cattle-watering troughs, sewers, rain barrels, and slop buckets. Only 2.2% of the 1,309 drownings studied in 1955 took place at beaches or pools where lifeguards were in attendance; 16.8% (or 220) of the drownings occurred among children under 5 years of age who were left unattended for a few moments; and a large number of water death victims were of pre-high-school age. The highest incidence of deaths was found in June, July, and August (4 p. m., Sundays). Slightly more than 9% of the victims had been under the influence of alcohol. There was a ratio of six men for every woman victim. Almost a quarter of the fatalities occurred after boats carrying nonswimming passengers had been upset. Only 26.3% of the drownings happened to persons engaged in recreational swimming. The study, a doctoral thesis, will be available this fall after its publication by the Center for Safety Education.

**Congress of Ophthalmology.**—The interim congress of the Pan American Association of Ophthalmology will be held in conjunction with the annual meeting of the National Society for the Prevention of Blindness, April 7-10, at the Hotel Statler, New York, according to an announcement by Dr. Brittain F. Payne, New York, president of the association. The official subjects, to be discussed by invited speakers, are "Diseases of the Ocular Fundus," "Ophthalmic Surgery," and "Therapeutics in Present-Day Ophthalmology." "Free" papers on other topics may be included in the program so far as time allows. Dr. John M. McLean, professor of clinical surgery in ophthalmology, Cornell University Medical College, New York, is chairman of the program committee. Those who wish to present papers are invited to communicate with Dr. McLean at New York Hospital, 525 E. 68th St., New York 21. Films are invited for a cinema program relating to the official subjects that is being planned under the chairmanship of Dr. Wendell L. Hughes, Professional Building, Hempstead, N. Y. Dr. Conrad Berens, former president of the association, and Dr. Algernon B. Reese, chairman of the fellowship committee, both of New York, are serving as consultants on plans for the congress.

**Meeting of Orthopsychiatric Association.**—The 34th annual meeting of the American Orthopsychiatric Association will convene at the Hotel Sherman, Chicago, March 7-9. The association, which includes educators, anthropologists, sociologists, and pediatricians, will meet jointly with the World Federation for Mental Health, the American Academy of Child Psychiatry, and the American Association of Psychiatric Clinics for Children. The 60 papers to be presented will deal with schools and mental health, inpatient and outpatient psychiatric treatment of children, adolescence and juvenile delinquency, psychiatric clinic management, adult psychotherapy, current social changes and their mental health implications, and international and intercultural factors of mental health. Also scheduled are 33 workshop sessions, mental health film showings, and exhibits related to mental health. Reports scheduled from other countries include orthopsychiatric research in Israel; mental health programs in Puerto Rico, India, and Pakistan; and child development and child care practices in the Soviet Union. A round table on world mental health problems is scheduled for the evening of March 6, preliminary to the meeting. Participants will include Margaret Mead, Ph.D., New York, anthropologist and president of the federation, and its director, Dr. John R. Rees, London.

**Course on Radiation Biology for High School Teachers.**—A summer course on radiation biology will be offered to 20 high school science teachers, July 1–Aug. 21, by the Harvard Medical School, Boston, in cooperation with the Harvard Graduate School of Education and the Harvard Summer School, under the joint sponsorship of the Atomic Energy Commission and the National Science Foundation. Applications will be closed April 1. Applicants may write to Prof. Fletcher G. Watson Jr., Ph.D., Lawrence Hall, Harvard University, Cambridge 38, Mass. The program will be under the joint direction of A. K. Solomon, Ph.D., of the biophysical laboratory, and Dr. Watson. In addition to concentrated laboratory work with radioisotopes, under the direction of Richard P. Durbin, Ph.D., associate in physiology, Harvard Medical School, students will have a project laboratory to aid them in devising simple experiments and demonstrations that can later be used in their high school classrooms. The course will be offered at no expense to the selected teacher-students. Through the National Science Foundation those accepted will receive a basic living allowance of $600 plus $120 for each dependent (up to a maximum of four) and travel expenses (for one person) at a rate of four cents a mile. The tuition and instructional expenses are borne by the Atomic Energy Commission.

**Radiologists Meet in New York.**—The Eastern Conference of Radiologists will convene March 7-9 at the Waldorf Astoria Hotel, New York City. Among the presentations Friday morning will be "Influence of Vascularization Lymphatic Drainage and Movement on the Behavior of Cancer" by Dr. Maurice Leniz, New York; "Irradiation Followed by Hysterectomy and Lymphadenectomy in Cancer of the Cervix" by Dr. Harry W. Burnett Jr., New York; and a symposium, "Treatment of Recurrent Carcinoma of the Cervix," for which Dr. James J. Nickson, New York, will serve as moderator. The afternoon session will open with a symposium, "Cystic Fibrosis of Pancreas," moderated by Dr. John P. Caffey, New York. Other presentations will include "Radiologic Appearance of Peripelvic Cysts of the Kidney" by Drs. William Dubilier Jr., New Rochelle, N. Y., and John A. Evans, New York City; "Simultaneous Intravenous Cholangiography and Urography" by Dr. William H. Shehadi, New York; and "Diaphragmatic Roentgen Kymographic Manifestations of Liver Metastases" by Dr. Bernard S. Epstein, New Hyde Park, N. Y. The Saturday program will include the following presentations:

Vertebral Pedicle Sign—a Roentgen Finding to Differentiate Metastatic Carcinoma from Multiple Myeloma, Harold G. Jacobson, New York; Maxwell H. Poppel, New York; Jerome H. Shapiro, New York; and Samuel Grossberger.

Special Technics of Value in Orthopedic Radiography, Maurice M. Pomeranz, New York.

Supervoltage Rotation Therapy for Cancer of the Head and Neck, Milton Friedman, New York.

Supervoltage Irradiation of Multiple Primary Lesions in the Head and Neck, Ruth Guttmann, New York.

Recent Advances in the Use of Radio-yttrium, H. C. Dudley, Ph.D., and Joseph Greenberg, New York.

## CANADA

**Meeting on General Practice.**—The College of General Practice of Canada will hold its first scientific convention March 4-6 at the Sheraton–Mount Royal Hotel in Montreal.

## FOREIGN

**Course on New Techniques and Instruments.**—"Biological Researches, Systematical and in Series, in Medicine and Prophylactic Medicine" is the title of a course on new techniques and instruments to be presented March 4-8 (afternoon sessions) by A. Suchet,

chief of the laboratory, Ophthalmological Foundation Adolphe de Rothschild (56, Avenue Mathurin-Moreau, Paris 19°).

**Medical Seminars in Vienna.**—The American Medical Society of Vienna will hold a series of seminar congresses in the university clinics. The subjects, which include various specialties, will be covered by the medical faculty of the University of Vienna. Meetings of the seminar congress on pediatrics are as follows:

April 1-3, Disenteric Disorders in Children, Celiac Disease, Diseases of the Digestive System.

May 2-4, Surgical Diseases of Children, Pediatric Urology, The Acute Abdomen.

June 3-5, Electromyography, Common Orthopedic Problems in Childhood, Cerebral Palsy—Electroencephalography.

July 1-3, Emergencies in the Neonatal Period: Erythroblastosis, Reabsorption Atelectasis, Hemorrhage, Acute Feeding Difficulties.

Aug. 1-3, Dermatological Manifestations of Systemic Disease in Children, Pediatric Pathology, Ocular Manifestations of Systemic Disease in Children.

Sept. 2-4, Pediatric Psychopathology, Long-Term Therapeutic Approach to Problems of Mongolism, Pedagogic Healing.

Oct. 1-3, Pediatric Endocrinology, Pediatric Hematology, Congenital and Acquired Heart Disease in Children.

Nov. 4-6, The "Atonic" Infant: C. N. S. and Cord Damage, Congenital Myasthenia, Amyotonia Congenita, Endocrine and Metabolic Disorders.

## DEATHS IN OTHER COUNTRIES

**Whitby, Sir Lionel,** a former president of the British Medical Association, died at the age of 61 in the Middlesex Hospital after an operation Nov. 24, 1956. He had served the University of Cambridge as Regius Professor of Physics since 1945, as Master of Downing College, and from 1951 to 1953 as vice-chancellor. An authority on hematology, he organized the Army blood transfusion service in World War II. He was the author of numerous medical publications. For his research on sulphapyridine, he was awarded the John Hunter triennial medal and prize by the Royal College of Surgeons. Sir Whitby was a Commander of the American Legion of Merit and a Chevalier of the Legion of Honor. He was an honorary member of the American Association of Physicians and of the New York Academy of Medicine. He had been a visiting professor of medicine at Harvard Medical School, Boston, in 1946, and had served as president of the International Society of Hematology, the Association of Clinical Pathology, and the first World Conference on Medical Education.

## CORRECTIONS

**Tea-Drinking and Gastritis.**—In the letter from the United Kingdom titled Tea-Drinking and Gastritis, in THE JOURNAL, Jan. 5, 1957, page 66, the word "casual" in the next to the last line should have been "causal."

**Phenylalanine in Foods.**—In THE JOURNAL, Oct. 13, 1956, page 697, in the seventh line of the Query and Minor Note concerning phenylalanine in foods, the sentence beginning "This is probably due to the fact that tyrosine is converted in the body into phenylalanine" should have read "This is probably due to the fact that phenylalanine is converted in the body into tyrosine."

## EXAMINATIONS AND LICENSURE

AMERICAN BOARD OF ANESTHESIOLOGY: *Part I.* Various locations, July 19. Final date for filing application was Jan. 19. *Oral.* Asheville, No. Car., Mar. 24-29. Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford 15, Conn.

AMERICAN BOARD OF DERMATOLOGY: *Written.* Several cities, June 27. *Oral.* Baltimore, Oct. 11-13. Final date for filing application is April 1. Sec., Dr. Beatrice Maher Kesten, One Haven Ave., New York 32.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Oct. 21. *Oral.* Boston, April 3-6. Final date for filing application was Jan. 2. Chicago, May 27-29; San Francisco or Los Angeles, September. Final date for filing application was Feb. 1. *Subspecialties. Gastroenterology.* Philadelphia, April 5-6. Final date for filing application is March 1. Exec. Sec., Dr. W. A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: Examination given twice annually, in the spring and fall. In order to be eligible a candidate must have his application filed at least six months before the examination time. Sec., Dr. Leonard T. Furlow, Washington University School of Medicine, St. Louis 10.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part II.* Chicago, May 16-25. Request for reexamination in Part II must be received prior to Feb. 1. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6, Ohio.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* New York, May 23-27; Chicago, Oct. 7-11. Sec., Dr. Merrill J. King, Box 236, Cape Cottage Branch, Portland 9, Maine.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, Oct. 7-11. Final date for filing application is April. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PATHOLOGY: *Oral and Written. Pathologic Anatomy and Clinical Pathology.* Washington, April 4-6. Final date for filing application is March 1. Sec., Dr. Edward B. Smith, Indiana University Medical Center, Indianapolis 7.

AMERICAN BOARD OF PEDIATRICS: *Oral.* New Orleans, Feb. 22-24. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: *Parts I and II.* New York City, June 8-9. Final date for filing application is March 1. Sec., Dr. Earl C. Elkins, 200 First St., S. W., Rochester, Minn.

AMERICAN BOARD OF PLASTIC SURGERY: *Entire Examination.* Philadelphia, May 4-6. Final date for filing case reports was Jan. 1. Corres. Sec., Mrs. Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8.

AMERICAN BOARD OF PREVENTIVE MEDICINE: *Oral and Written. Public Health.* Schools of Public Health, April 11-13. *Aviation Medicine.* Denver, May 9-11. *Occupational Medicine.* St. Louis, April 26-28. Sec., Dr. Thomas F. Whayne, 615 North Wolfe St., Baltimore.

AMERICAN BOARD OF PROCTOLOGY: *Oral and Written. Parts I and II.* September. Sec., Dr. Stuart T. Ross, 520 Franklin Ave., Garden City, N. Y.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New Orleans, Mar. 18-19. Final date for filing application was Sept. 10. New York, Dec. 16-17. Sec., Dr. David A. Boyd, Jr., 102-110 Second Ave., S. W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: Tampa, April 1-6. Final date for filing application was Jan. 1. Washington, Sept. 23-28. Final date for filing application is June 1. Within the near future a special examination for certification in Nuclear Medicine will be offered to diplomates in Radiology and Therapeutic Radiology. Application must be made before Feb. 15. Sec., Dr. B. R. Kirklin, Kahler Hotel Bldg., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Part II.* Nashville, Mar. 11-12; Boston, April 8-9, and New York, June 10-11. Sec., Dr. John B. Flick, 225 S. 15th St., Philadelphia 2.

AMERICAN BOARD OF UROLOGY: February 1957. Sec., Dr. William Niles Wishard, 1711 N. Capital Ave., Indianapolis 7.

BOARD OF THORACIC SURGERY: *Written.* Various centers throughout the country, February 1957, and the closing date for registration was Dec. 1, 1956. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2.

# DEATHS

**Wartenberg, Robert** ⊕ San Francisco; born in Grodno, Russia, June 19, 1887; Universität Rostock Medizinische Fakultät, Rostock, Mecklenberg, Germany, 1920; at one time physician-in-chief of the nerve clinic, University of Freiburg in Breisgau, Germany, where he was professor of neurology; in 1936 joined the faculty of the University of California School of Medicine as lecturer and research associate in neurology, subsequently becoming instructor in neurology, assistant clinical professor of neurology, associate clinical professor of neurology, clinical professor of neurology, and since July 1, 1954, clinical professor of neurology emeritus; on Feb. 1, 1955, recalled to active part-time teaching service; specialist certified by the American Board of Psychiatry and Neurology; member of the American Neurological Association; fellow of the American Academy of Neurology; corresponding member of the German and Rio de Janeiro societies of neurology; honorary member of the neurological societies of Spain, Italy, Yugoslavia, and Vienna; honorary member of the Association of German Neuropathologists and the German Society of Neurosurgery; author of "Examination of Reflexes," "Hemifacial Spasm," and "Diagnostic Tests in Neurology," translated into Spanish, German, Serbian, and Japanese and an Italian translation is in preparation; two hours before entering the hospital, he completed a book, "Neuritis, Sensory Neuritis, Neuralgia"; on the editorial boards of the *Journal of Nervous and Mental Disease, Confinia neurologica,* Basle, Switzerland, *Neuropsiquiatría,* and *Neurology;* author of many papers in German and English; died in the Herbert C. Moffitt–University of California Hospitals Nov. 16, aged 69, of myocardial and cerebral infarcts.

**Arbuthnot, Thomas Shaw** ⊕ Pittsburgh; born in Allegheny Feb. 18, 1871; Columbia University College of Physicians and Surgeons, New York City, 1898; M.R.C.S., England, and L.R.C.P., London, 1900; professor emeritus of medicine at the University of Pittsburgh School of Medicine, where he was dean from 1908 to 1918 and for many years associate professor of medicine; a veteran of World War I; in 1912 member of the House of Delegates of the American Medical Association; for many years associated with the Children's Hospital, where he was president from 1927 to 1947; formerly on the staffs of the Mercy and Western Pennsylvania hospitals; president of the Carnegie Hero Fund Commission; author of the book "African Hunt"; died Dec. 2, aged 85, of heart disease.

**Evans, Frank Alexander** ⊕ Pittsburgh; born in Pittsburgh April 23, 1889; Johns Hopkins University School of Medicine, Baltimore, 1914; specialist certified by the American Board of Internal Medicine; member of the Association of American Physicians, American Society for Clinical Investigation, and the American Clinical and Climatological Society, of which he was vice-president; fellow of the American College of Physicians; served on the faculty of his alma mater; for many years chief of the medical staff at the Western Pennsylvania Hospital, where he became emeritus chief and where he died Dec. 13, aged 67, of asthma and uremia.

**Jones, Augustus Benjamin** ⊕ Colonel, U. S. Army, retired, Palo Alto, Calif.; born in Eastman, Ga., Aug. 5, 1889; Atlanta (Ga.) College of Physicians and Surgeons, 1910; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; entered the Medical Corps of the U. S. Army in 1915; retired Feb. 28, 1949; awarded the Legion of Merit, American Campaign medal, and the American Defense Service medal with Foreign Service Clasp during World War I; received the Victory medal during World War II; died Nov. 5, aged 67.

**Maguire, Charles Hugh** ⊕ Louisville, Ky.; University of Louisville School of Medicine, 1936; professor of surgery at his alma mater; specialist certified by the American Board of Surgery; member of the Southern Surgical Association, Southeastern Surgical Congress, and the American Association for the Study of Trauma; fellow of the American College of Surgeons; served on the staffs of St. Joseph Infirmary, Norton Memorial Infirmary, Kentucky Baptist Hospital, Kosair Crippled Children Hospital, and the Childrens Hospital; died Nov. 23, aged 46.

**Spiegelglass, Abraham Bennett,** River Edge, N. J.; University of Pittsburgh School of Medicine, 1908; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology and the Association for Research in Ophthalmology; an associate member of the American Medical Association; consultant at the Bergen Pines County Hospital in Paramus; on the staff of the Hackensack Hospital in Hackensack, and the Holy Name Hospital in Teaneck; died Nov. 13, aged 70.

**Dorris, Jewell Mays** ⊕ Memphis, Tenn.; Vanderbilt University School of Medicine, Nashville, 1926; assistant professor of surgery at the University of Tennessee College of Medicine; member of the Southeastern Surgical Congress; fellow of the American College of Surgeons; charter member and past-president of the Memphis Surgical Society; on the staffs of the Baptist Memorial, John Gaston, Methodist, St. Joseph, and Gartly-Ramsay hospitals; died Dec. 3, aged 54, of heart disease.

**Mayer, William** ⊕ New York City; Ludwig-Maximilians-Universität Medizinische Fakultät, München, Bavaria, Germany, 1910; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association and the Association for Research in Nervous and Mental Diseases; at one time clinical director of South Oaks, Long Island Home in Amityville; on the staff of the Neurological Institute of Columbia Presbyterian Medical Center; died Dec. 11, aged 69, of coronary occlusion.

⊕ Indicates Member of the American Medical Association.

**Ridout, George Bond,** La Crosse, Wis.; University of Louisville (Ky.) School of Medicine, 1926; formerly an officer in the U. S. Navy; specialist certified by the American Board of Otolaryngology and the American Board of Ophthalmology; member of the American Academy of Ophthalmology and Otolaryngology; served as head of the department of ophthalmology and otology, Gunderson Clinic, La Crosse Lutheran Hospital; died in the La Crosse County Hospital in West Salem Nov. 24, aged 55.

**Sweeney, Charles Thomas** ✠ Ashland, Ore.; Kansas City (Mo.) Medical College, 1891; fellow of the American College of Surgeons; past-president of the Oregon State Medical Society, Jackson County Medical Society, Southern Oregon District Medical Society, and the Pacific Northwest Medical Society; fellow of the American College of Surgeons; served as county coroner and health officer at Cascade County, Mont.; in 1917 served in the Oregon legislature; died in Portland Nov. 11, aged 87.

**Addison, Cornelius John** ✠ Jackson, La.; University of Michigan Medical School, Ann Arbor, 1916; at one time health officer of Muskegon, Mich.; veteran of World War II; died Dec. 14, aged 65, of pulmonary congestion and cerebral hemorrhage.

**Andrews, Boliver Cornelius** ✠ Dallas, Texas; Barnes Medical College, St. Louis, 1908; died Dec. 1, aged 78.

**Andrus, Walter Haskell,** Greenville, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; for many years practiced in Philadelphia, where he was on the staff of the Germantown Dispensary and Hospital; died in Sharon Nov. 28, aged 82, of mesenteric thrombosis.

**Anthony, Sarkis Jabour** ✠ Buffalo; University of Buffalo School of Medicine, 1933; assistant professor of medicine and therapeutics at his alma mater; superintendent of the Edward J. Meyer Memorial Hospital; died Dec. 3, aged 46.

**Apolant, Edgar Sigmund** ✠ Port Washington, N. Y.; Julius-Maximilian-Universität Medizinische Fakultät, Würzburg, Bavaria, Germany, 1923; member of the American Academy of General Practice; served on the staffs of the Manhasset Medical Center and North Shore hospitals in Manhasset; died Nov. 19, aged 62.

**Athey, Henry Benedict** ✠ Baltimore; University of Maryland School of Medicine, Baltimore, 1911; died Dec. 8, aged 76.

**Auer, Clara Meltzer,** Webster Groves, Mo.; Johns Hopkins University School of Medicine, Baltimore, 1900; died Nov. 27, aged 82.

**Baird, William Oscar,** Henderson, Tenn.; University of Louisville (Ky.) Medical Department, 1907; member and past-president of the Tennessee State Medical Association; past-president of the West Tennessee Medical and Surgical Association; at one time associated with the Memphis Board of Health; veteran of World War I; served as state institutions commissioner; died in the Jackson-Madison County General Hospital, Jackson, Nov. 19, aged 73.

**Bartoli, Joseph Faraci** ✠ New York City; University of Georgia Medical Department, Augusta, 1926; fellow of the American College of Surgeons; on the staffs of the Flower and Fifth Avenue Hospitals; died Dec. 10, aged 57, of coronary sclerosis.

**Belcher, Fannin Safford,** Savannah, Ga.; Howard University College of Medicine, Washington, D. C., 1901; died in the Charity Hospital Sept. 8, aged 84, of myocarditis and acute prostatitis.

**Best, Bruce Taylor,** Arlington Heights, Ill.; Rush Medical College, Chicago, 1904; served on the staff of the Sherman Hospital in Elgin; died Dec. 27, aged 80, of coronary disease.

**Bisdorf, Mathew H.,** Chicago; Jenner Medical College, Chicago, 1906; chief of staff emeritus, St. Elizabeth Hospital; died Dec. 28, aged 75.

**Bohannan, Frank Charles,** Fort Bliss, Texas; University of Louisville (Ky.) School of Medicine, 1919; formerly practiced in Carlsbad, N. Mex., where he served on the New Mexico Boxing Commission; died Nov. 20, aged 61, of carcinoma of the pancreas.

**Campbell, Burke Hull,** Indianola, Miss.; University of Nashville (Tenn.) Medical Department, 1904; on the staff of the South Sunflower County Hospital; died Nov. 20, aged 76.

**Clanton, Robert Algeon** ✠ Grenada, Miss.; Memphis (Tenn.) Hospital Medical College, 1912; mayor of Grenada; served as county health officer; died Nov. 29, aged 72, of hypertensive heart disease and cerebral thrombosis.

**Conner, John Franklin** ✠ Sidney, Ohio; Eclectic Medical College, Cincinnati, 1915; veteran of World War I; charter member of the staff of the Wilson Memorial Hospital, where he died Nov. 17, aged 62, of cerebral hemorrhage.

**Dick, Murray** ✠ Newport News, Va.; Medical College of Virginia, Richmond, 1932; died in the Mary Immaculate Hospital Nov. 30, aged 52, of coronary thrombosis.

**Dimon, John** ✠ Polson, Mont.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1913; veteran of World War I; past-president of the Montana Horticultural Society; at one time practiced in Three Forks, where he was mayor; health officer for state public health district no. two; served on the staff of the Hotel Dieu Hospital, where he died Nov. 5, aged 72, of heart disease and pneumonia.

**Hall, Rowland William** ✠ Clinton, Miss.; University of Arkansas School of Medicine, Little Rock, 1939; veteran of World War II; died in Vicksburg Dec. 10, aged 48, of coronary thrombosis.

**Haskins, William Vincent** ✠ La Salle, Ill.; Northwestern University Medical School, Chicago, 1928; fellow of the American College of Surgeons; on the staffs of the Peoples Hospital in Peru and St. Mary's Hospital, where he died Dec. 16, aged 52, of a skull fracture received in a fall.

**Haverkampf, Charles Walter** ✠ Lieutenant Colonel, U. S. Army, retired, Sarasota, Fla.; University of Kansas School of Medicine, Kansas City, 1908; commissioned in the Medical Corps of the U. S. Army in 1910; retired Oct. 31, 1933, for disability in line of duty; fellow of the American College of Surgeons; died Nov. 28, aged 76, of coronary occlusion.

**Kernis, Leonard** ✠ Chicago; University of Illinois College of Medicine, Chicago, 1943; specialist certified by the American Board of Anesthesiology; member of the American Society of Anesthesiologists; veteran of World War II; on the staff of the Michael Reese Hospital, where he died Dec. 22, aged 36, of acute coronary occlusion.

**Kincannon, LeRoy Taylor** ✠ Birmingham, Ala.; University of Virginia Department of Medicine, Charlottesville, 1920; formerly on the faculty of the Medical College of Alabama; specialist certified by the American Board of Otolaryngology; veteran of World War II; on the staffs of the South Highlands Infirmary, Children's Hospital, St. Vincent's Hospital, and the Birmingham Baptist Hospital; died Nov. 28, aged 62, of myocardial infarction.

**King, Alvin Earl,** Mount Cory, Ohio; Eclectic Medical College, Cincinnati, 1912; died Nov. 29, aged 75, of cerebral thrombosis.

**Lichtig, Henry Allen** ✠ Cleveland; University of Michigan Medical School, Ann Arbor, 1916; on the staff of the Polyclinic Hospital; died Dec. 11, aged 63, of heart disease.

**Liddell, Samuel Houston** ✠ Myrtle, Miss. (licensed in Mississippi in 1911); died in the Shands Hospital, New Albany, Dec. 5, aged 67.

**McClelland-Olson, Sophia J.,** Los Banos, Calif.; Hahnemann Medical College, San Francisco, 1885; College of Physicians and Surgeons of San Francisco, 1900; died Dec. 1, aged 95.

**McGee, Roy William,** Atlanta, Ga.; Atlanta School of Medicine, 1912; member of the Medical Association of Georgia; specialist certified by the American Board of Preventive Medicine; formerly county health director; named head of the Fulton County Health Department, when the city of Atlanta and Fulton County were combined; died Nov. 30, aged 68, of coronary thrombosis.

**McKee, Carlos Reese,** Hazlehurst, Miss.; Memphis (Tenn.) Hospital Medical College, 1907; veteran of World War I; died in the Hardy Wilson Memorial Hospital Dec. 11, aged 74.

**Mack, Clifford Hayes** ✠ Honesdale, Pa.; University of Pittsburgh School of Medicine, 1931; member of the American Trudeau Society; veteran of World War I; on the staff of the Wayne County Memorial Hospital, where he died Nov. 14, aged 52.

**May, Henry Buchanan,** Kenedy, Texas; University of Tennessee College of Medicine, Memphis, 1914; died in November, aged 81.

**Mayer, Rudolph Adalbert,** Abbeville, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1888; died Nov. 28, aged 87.

**Montgomery, Thaddeus Robert,** Memphis, Tenn.; Memphis (Tenn.) Hospital Medical College, 1904; served on the faculty of his alma mater; died in the Baptist Memorial Hospital Nov. 25, aged 77.

**Mortimer, Egbert Laird, Jr.,** Baltimore; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1930; member of the Medical and Chirurgical Faculty of Maryland and the American Academy of General Practice; on the staffs of the St. Agnes and Franklin Square hospitals; died Dec. 2, aged 52, of cerebral hemorrhage.

**Nelson, David Edwin,** Alexandria, Minn.; Chicago College of Medicine and Surgery, 1909; a medical officer in France during World War I; died Nov. 12, aged 73, of acute anterior coronary thrombosis.

**Newby, Harley Dore** ✠ Rapid City, S. D.; Rush Medical College, Chicago, 1911; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; active on the city commission and the city school board; veteran of World War I; on the staffs of the St. John's McNamara Hospital and the Bennett Memorial Hospital; died Nov. 1, aged 70, of a heart attack.

**Nietsch, Walter Erich Lothar,** New Bedford, Mass.; University of Pennsylvania School of Medicine, Philadelphia, 1910; served on the staff of St. Luke's Hospital; died Nov. 16, aged 70.

**Nyberg, Robert Burdett,** Galatia, Ill.; St. Louis University School of Medicine, 1905; at one time practiced in Harrisburg, where he was one of the founders of the Harrisburg Hospital; died in Harrisburg Nov. 18, aged 77, of uremia and benign prostatic hypertrophy.

**Olmstead, George Tracy** ✠ Savannah, Ga.; Atlanta School of Medicine, 1913; also a graduate in pharmacy; life member and past-president of the Georgia Medical Society; consultant on the medical staff of the Warren A. Candler Hospital; died in Augusta Nov. 29, aged 68.

**Ould, William Lyle,** Appomattox, Va.; University of Louisville (Ky.) Medical Department, 1894; died Nov. 22, aged 82, of pneumonia.

**Owens, John Harlan** ✠ Orange Park, Fla.; Tulane University School of Medicine, New Orleans, 1921; member of the American Academy of General Practice; died Nov. 24, aged 60, of coronary thrombosis.

**Purser, Thomas** ✠ McComb, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1897; served as president of the Pike County Medical Society and Tri-County Medical Society and vice-president of the Mississippi State Medical Association; formerly on the staffs of the McComb Infirmary and the McComb City Hospital, where he died Oct. 23, aged 84, of lymphosarcoma and gastric hemorrhage.

**Reynolds, Kenneth Earl,** Waynesboro, Pa.; Jefferson Medical College of Philadelphia, 1933; an associate member of the American Medical Association; on the staff of the Waynesboro Hospital; died at the Veterans Administration Hospital, Long Beach, Calif., Nov. 8, aged 48, of cerebral hemorrhage.

**Rock, Marvin Gibbons,** Bristol, Va.; University of Tennessee College of Medicine, Memphis, 1925; also a druggist; veteran of World War I; died in the Bristol Memorial Hospital in Bristol, Tenn., Nov. 2, aged 62.

**Rubenstein, Joseph** ⊕ Chicago; University of Illinois College of Medicine, Chicago, 1925; veteran of World War II; on the staff of the Illinois Masonic Hospital, where he died Dec. 7, aged 56, of coronary insufficiency.

**Salzer, Benjamin P.** ⊕ New York City; Long Island College Hospital, Brooklyn, 1909; fellow of the New York Academy of Medicine and the American Association for the Advancement of Science; served on the faculty of the Columbia University College of Physicians and Surgeons; on the staff of the Lenox Hill Hospital; died in the Mount Sinai Hospital Nov. 12, aged 74.

**Sanders, Lillard Darwin,** Tucson, Ariz.; Rush Medical College, Chicago, 1897; died Nov. 6, aged 83, of cerebral thrombosis and arteriosclerosis.

**Segal, Joseph** ⊕ Seattle; Boston University School of Medicine, 1917; died Nov. 12, aged 63.

**Sheehan, Edward Charles** ⊕ Oak Park, Ill.; Loyola University School of Medicine, Chicago, 1934; veteran of World War II; on the senior staff of St. Anne's Hospital in Chicago; died Nov. 20, aged 47, of acute myocardial infarction.

**Sieber, Isaac Grafton,** Audubon, N. J.; Jefferson Medical College of Philadelphia, 1902; also a graduate in pharmacy; an associate member of the American Medical Association; for many years school physician; president of the Audubon National Bank; on the staff of the Jefferson Medical College Hospital in Philadelphia, where he died Dec. 1, aged 79, of acute yellow atrophy of the liver.

**Sims, Foster Downs,** Waco, Texas; University of Texas School of Medicine, Galveston, 1904; died Oct. 10, aged 79.

**Smith, Clyn,** Clovis, N. Mex.; St. Louis University School of Medicine, 1903; served as mayor; died in Kansas City, Mo., Dec. 2, aged 85, of virus encephalitis.

**Smith, Mervin Hays,** Seaside, Ore.; John A. Creighton Medical College, Omaha, 1902; fellow of the American College of Surgeons; veteran of World War I; died in the Seaside Hospital Nov. 24, aged 79.

**Spizzi, Paul** ⊕ Sunmount, N. Y.; Regia Università degli Studi di Firenze. Facoltà di Medicina e Chirurgia, Italy, 1924; on the staff of the Veterans Administration Hospital, where he died Nov. 13, aged 56, of coronary occlusion.

**Stepp, Ervin Prentice,** Kermit, W. Va.; National University of Arts and Sciences Medical Department, St. Louis, 1915; member of the West Virginia State Medical Association; died in St. Mary's Hospital, Huntington, Nov. 25, aged 68, of carcinoma of the prostate.

**Stevens, Thomas Hood** ⊕ Sulphur Springs, Texas; Louisiana State University School of Medicine, New Orleans, 1937; veteran of World War II; died Nov. 26, aged 45.

**Stolley, J. George** ⊕ Moville, Iowa; John A. Creighton Medical College, Omaha, 1905; city health officer and school physician for many years; member and past-president of the staff of the Methodist Hospital in Sioux City, where he died Nov. 30, aged 79, of myocarditis.

**Strong, Francis Xavier,** Pittsburgh; Jefferson Medical College of Philadelphia, 1905; died in the Woodville State Hospital in Woodville Aug. 2, aged 73.

**Szalay, Stephen Charles** ⊕ Brooklyn, N. Y.; Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest, Hungary, 1913; during World War I a captain in the Austrian-Hungarian Army; decorated by the British, French, and Italian governments for his treatment of war prisoners; died in the Long Island College Hospital Nov. 19, aged 68, of coronary disease.

**Tay, Justin Carlton,** East Cleveland, Ohio; University of Vermont College of Medicine, Burlington, 1920; on the staff of the Huron Road Hospital, where he died Oct. 8, aged 66.

**Thein, Garfield M.** ⊕ Oelwein, Iowa; Chicago College of Medicine and Surgery, 1911; died Nov. 1, aged 72, of heart disease.

**Toler, Thomas Maxwell, Jr.** ⊕ Washington, La.; Louisiana State University School of Medicine, New Orleans, 1944; veteran of World War II; died Nov. 23, aged 35, of injuries received in a plane crash.

**Warriner, William Royall** ⊕ Crewe, Va.; University College of Medicine, Richmond, 1909; served on the staff of the Southside Community Hospital in Farmville; surgeon for the Norfolk and Western Railroad; died in Richmond Nov. 6, aged 72, of a heart attack.

**Waymire, Elbert Shirk** ⊕ Indianapolis; Indiana University School of Medicine, Indianapolis, 1910; died Dec. 4, aged 70, of coronary occlusion.

**Weil, Walter** ⊕ New York City; Ludwig-Maximilians-Universität Medizinische Fakultät, München, Bavaria, Germany, 1921; died in the Jewish Memorial Hospital Dec. 12, aged 63, of coronary thrombosis, following injuries received in an automobile accident.

**Weld, Anna** ⊕ Rockford, Ill.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1906; fellow of the American College of Physicians; specialist certified by the American Board of Internal Medicine; served on the staff of the Rockford Memorial Hospital; one of the first directors of the Rockford Municipal Tuberculosis Sanitarium, where she died Dec. 2, aged 90, of cardiorenal vascular disease.

**Wilmot, Frank Alonzo,** Oakland, Calif.; Lincoln (Neb.) Medical College of Cotner University Medical Department, 1913; for a time senior physician at San Quentin Prison; died Oct. 28, aged 70, of a heart attack.

**Younan, Thomas** ⊕ Shelbyville, Ind.; State University of Iowa College of Medicine, Iowa City, 1936; veteran of World War II; died in the Veterans Administration Hospital, Indianapolis, Aug. 8, aged 47, of carcinoma of the lung with metastases.

# FOREIGN LETTERS

## BELGIUM

**Toxic Reactions to Antibiotics.**—Professor Royer reported, during the Medical Days of Brussels, that the side-effects of antibiotics in children, although not severe, often produce symptoms that are hard to interpret and may, thereby, confuse the diagnosis. Severe reactions fortunately are rare. These include anaphylactic shock due to penicillin, aplastic anemia due to chloramphenicol, meningoencephalitis due to the intrathecal injection of penicillin, Jarisch-Herxheimer reaction in patients with typhoid fever or congenital syphilis, micrococcic (staphylococcic) enterocolitis, and generalized moniliasis. The following rules should be observed: 1. Do not give antibiotics to children except for definite indications after an exact diagnosis has been made. 2. Limit treatment to one or two antibiotics, preferably after sensitivity tests. 3. Use the full recommended dose at the beginning of treatment. 4. Give supplementary folic acid, vitamins K and B, and liver extract or dried yeast. 5. Give nursing infants who are severely injured prophylactic doses of nystatin. 6. Choose, since a choice is made possible by the study of the sensitivity of the germ, the antibiotic that is likely to cause the least severe reaction; in this respect penicillin is still the best.

## DENMARK

**The Psychiatric Case in a General Hospital.**—What is to be done with the patient whose psychiatric ailments are more or less responsible for his admission to the medical service of a general hospital? To answer this question, Dr. E. Halling (*Ugeskrift for læger*, Nov. 29, 1956) made a special study of the 128 patients who at the time of their admission to the Vejle County Hospital or soon afterward gave the impression that their ailments were chiefly psychic. They underwent searching psychiatric examinations given by junior members of the staff who, though interested in psychiatry, were not full-fledged psychiatrists. After the exclusion of 17 patients whose disease was chiefly somatic, there were 111 whose disease was mainly psychic. The diagnoses in 66 patients was neurasthenia; in 17, mental depression; in 10, psychosis; in 6, neurosis; and, in 12, such conditions as oligophrenia and hypochondriasis. The average interval between the first onset of these psychiatric ailments and the patient's admission to the hospital was 12 years. While 28 patients had moved from the country to a town, only 4 had moved from a town to the country. In 18 cases financial strain and in 17 cases housing difficulties were a major contributory cause of illness. Little can be done for this type of patient by a month's stay in a general hospital where sedatives are supplemented by a few hours' talk with a physician. Since the patient's ailment has been developing for about 12 years, his personality has become stamped by it, and such a personality is bound to prove refractory to tinkering by persons without psychiatric training. Halling urges the establishment of a 10-to-15-bed wing to be annexed to a general hospital and to be staffed by two or three psychiatrists and one or more social workers.

**Double-Blind Testing of Remedies.**—In the same issue Dr. J. Kjaer-Larsen reported on the analgesic action of a new compound in 85 patients. What he and the editor have to say throws more light on double-blind testing with an inert drug, in general, than on this particular compound. The proposal that an institute for the testing of medical remedies by the double-blind method be created is met with figures on the cost of double-blind testing of the 70 odd drugs put on the market every year in Denmark. With his experience of testing the compound in question, Kjaer-Larsen has calculated that such double-blind testing would require a full-time scientist and three technicians. The cost would be great, but the saving afforded by the discarding of remedies found to be valueless might also be great. Referring to Kjaer-Larsen's observation that even a well-established analgesic may show up little better than an inert drug used as a placebo, the editor said that, when about 67% of a group of patients obtain relief from their pain from a tablet containing only lactose, we cannot call it inert. It is of little importance to the patient that its action depends on suggestion and not on lactose, but the physician would do well to note this phenomenon.

**Appendicitis in the Aged.**—The surgical staff of the Frederiksberg Hospital was impressed by the renewed frequency of appendicitis in the aged. To test the accuracy of this impression, Dr. E. Christensen scrutinized the records of the hospital during the period 1948 to 1952 inclusive, when 1,254 cases of appendicitis were treated. Among these were 90 patients over the age of 60. There were 56 between the ages of 60 and 69, 30 between 70 and 79, and 4 over 80. With five deaths among these patients, the case fatality rate was 5.6%, whereas it was only 0.34% for the remaining 1,164 patients. When the 142 patients between the ages of 30 and 39 were compared with the group of patients over 60, it was found that complications were four times more frequent among the latter. The high rate of perforation among the aged may be due in part to their tendency to obesity, which may obscure the diagnosis. Christensen favors operating on the patient whatever his age, but he adds the proviso that a palpable swelling in the appendical region may require conservative treatment to be followed later on by an operation with the patient in a state of hypo-

The items in these letters are contributed by regular correspondents in the various foreign countries.

thermia. The occasion should be taken during such an operation to explore the possibilities of malignant disease in the region of the cecum.

**Asbestosis.**—In Denmark, asbestos does not occur in the natural state and comparatively few persons handle imported asbestos. However, since 1950 cases of asbestosis have been observed in factories making insulation products, brake linings, and floor material. The discovery of these cases has led to closer supervision of factories handling asbestos, and in the *Danish Medical Bulletin* of November, 1956, J. Frost and co-workers report on their examination of 31 factory workers employed for 20 years or more on different kinds of insulation work. The union to which they belonged cooperated in urging these workers to submit to detailed clinical and radiologic examinations of the chest. The average age of the workers was 52, and the average duration of exposure to asbestos was 27 years. In 22 workers, radiologic abnormalities were found in the chest; in 9, there were varying degrees of pulmonary asbestosis. In 19 patients, abnormalities of the pleura were also found. Parenchymatous lesions of the lungs alone were found in three patients, and in six such lesions were combined with pleural adhesions (with calcification in three). Only one patient had a history of pleurisy with effusion. This had occurred 18 years earlier.

**Dogbites in Greenland.**—In the northern part of Greenland dogs are still necessary for transport over great distances. At times these dog teams are on the verge of starvation. This gives rise to savage reactions on their part when, for example, a child stumbles and falls while at play in front of them. In *Ugeskrift for læger* for Oct. 4, 1956, Dr. M. Carl notes that between September, 1921, and September, 1955, the hospital at Jacobshavn treated 28 patients for dogbite; most of the patients were young children. The wounds often involved the pudendal region and were apt to be superficial, with marks from each tooth, as if the dog had been in a hurry to inflict as many wounds as possible in order to paralyze its victim quickly. The only fatal case was that of an adult whose bite was not treated until five days after it had been incurred. Many of the children would have been killed had they not been snatched away in time. The law in Greenland requires that the dog team convicted of attacking human beings must be destroyed. However, Dr. Carl advocates taking more active steps to prevent dogbites.

## ITALY

**Anuria.**—The National Medical Association and the National Surgical Association held a joint meeting in October in Milan. Here it was brought out that, as opposed to temporary suspension of the flow of urine from the kidneys and to oliguria, anuria is always the result of two concomitant factors: a local lesion in the kidney and a severe and general disturbance in the circulation. Oliguria may be caused by a mild manifestation of either factor alone. Anuria rarely changes into oliguria. On the contrary, anuria may be followed, suddenly, by an abundant polyuria, which, however, is a bad sign, because it indicates a marked imbalance in the water-electrolyte equilibrium. Meldolesi differentiates (1) obstructive anuria due to ureteral obstruction, (2) prerenal anuria due to factors in the general circulation that greatly reduce the flow of blood into the kidney, and (3) renal anuria due to lesions in the renal parenchyma. Acute uremia is the chief danger from anuria. Treatment must be directed toward the specific cause of the anuria. Kidney biopsy should be obtained if possible. Artificial kidney and transfusion of blood plasma are excellent treatments, but they must be used with caution because in some cases they may aggravate the cause of the anuria.

A. Ciminata said that for anuria due to burns, the crush syndrome, and transfusion the treatment of choice is decapsulation of the kidney. He compared the distention present in the anuric kidney to that in the eye affected with glaucoma. Freeing the capsular band permits a free flow of blood and lymph through the kidney. The speaker recognized the usefulness of the artificial kidney, but, if the artificial kidney fails, the time lost reduces the possibility of success of decapsulation. Therefore, the speaker proposes that decapsulation should be performed early. Dogliotti, on the other hand, strongly favored the use of the artificial kidney, and Alwall of Lund, Sweden, reported excellent results in 470 patients with anuria treated with the artificial kidney. Di Nunno recommended the injection of procaine in the renal artery in patients with reflex anuria. Pettinari stressed the use of blood transfusion. In his experience the results with the artificial kidney were extremely unreliable. The consensus was that the physician must use the treatment best suited to the individual patient, taking into consideration not only the original cause of anuria but also the age and general condition of the patient.

**Neurobiology of Pain.**—Professor Pero (*Annali Ravasini*, no. 18, Sept. 15, 1956) defines algogenesis as the anatomic substrate and the biological mechanisms that help to determine the sensation of pain. He admits that there is a physiological type of pain, the function of which is to warn that there is a danger that threatens the integrity of the cells, but adds that there is also a pathological type of pain that results from destruction within the tissues or alterations in the cellular metabolism. All authors do not admit the existence of a physiological pain. Those who admit its existence think that there is a mechanism, diffused throughout the organism, that intercepts nociceptive stimuli. This mechanism is constituted by the intraepithelial nerve endings and, in general, by all the amyelinic nerve endings. The amyelinic fibers are the chief transmitters of pain impulses derived from the peripheral nociceptive nerve endings; thus they represent the first neuron of the pathway of pain.

Professor Pero has formulated the theory that pain is the result of an overcharge of acetylcholine in synapses or of hyperfunction of the cholinergic neurons, while analgesia is conditioned by adrenergic discharges in the same synapses. The proof of the exist-

ence of an adrenergic analgesia was obtained by injecting intravenously small amounts of epinephrine into patients with sciatica. The result was an almost complete analgesia that lasted for about six hours. The problem of cutaneous pain is more complex. It seems that in such cases the chemical mediator is represented by histamine or histamine-like substances.

**One Hundred Years of Dentistry.**—Prof. Silvio Palazzi of the University of Pavia described the transition from the old empirical concepts of dentistry to the modern theories and scientific applications. Politics have always been of great importance in all aspects of the evolution of odontology. Stomatological politics is defined as a complex of laws enacted by the government that brought about the elevation of dental disciplines from the empirical state to the present doctrinal dignity. During this period, which in Italy lasted from 1860 to 1914, dentistry was not regulated by law and was not taught in the universities. The first school for dental technicians was founded at the University of Pavia in 1911. Political stomatology, as opposed to stomatological politics, includes those constructive acts that have brought dentistry within the field of politics. The teaching of dentistry was stopped during World War I, while in the Army a dental organization was created. This not only helped soldiers with wounded jaws but also gave a scientific and doctrinal status to the discipline. At present in Italy many medical general practitioners and dental technicians practice dentistry without adequate training. This applies especially to prosthodontia and orthodontia. From the point of view of the dental specialist, these persons are practicing illegally and bringing discredit to the dental profession.

**Treatment of Tuberculosis.**—At the fourth International Congress of the American College of Chest Physicians held in Cologne, Germany, in August, Professor Zorini, of Rome, and co-workers reported their results in treating several forms of chronic pulmonary tuberculosis that had not been benefited by other types of treatment with pyrazinamide. In general, this drug caused subjective and objective improvement in patients, especially in the first 40 to 50 days of treatment. The clinical improvement, however, was not always accompanied by a radiologic improvement. The use of cycloserine produced a rapid and marked improvement in the objective and subjective conditions of the patients and in the radiologic findings. The healing of cavities was noticed in many patients.

## SWEDEN

**Varicose Ulcers.**—In a series of 700 patients with varicose ulcers of the legs, G. Bauer (*Nordisk medicin*, Nov. 22, 1956) found two groups in about equal numbers: In one group there was a history of venous thrombosis evidently responsible for the edema and ulcers; and in the other group, whose condition was described as idiopathic for want of a more accurate term, various factors were responsible for the insufficiency of the valves of the veins. In some cases, senile changes in the walls of the veins may be responsible; in others, there is some congenital abnormality; and, in others, no underlying cause could be determined. The author recommends double ligation of the popliteal vein and resection of the intermediate segment, supplemented by bandaging to give the limb support. In about 15% of his patients, he ligated and sclerosed the incompetent superficial veins. He reported his results, according to whether the postoperative observation period was three years or six years. In the first series, consisting of 350 patients, after three years 75.7% seemed to be completely cured; they showed no sign of a return of symptoms. In the rest, there had been one or more relapses, nearly all of which occurred within a year after operation. After the first two postoperative years only two patients had relapses. In the second series (100 patients), after six years 74% of the patients appeared to be completely cured. In this series also most of the relapses occurred in the first year after operation. Indeed, there were only two relapses after the first three years.

**Cancer of the Cervix.**—At a meeting of the Swedish Medical Society, Dr. H. Leissner, of the Sahlgren Hospital, Gothenburg, reported that in 1944 only 18% of the patients were in the first stage of cancer of the cervix when first seen. In 1954 it had risen to 38% There was a corresponding fall in the percentage of patients first seen in the third stage of the disease. The speaker did not know all the factors responsible for this shift in the relative frequency of cancer of the cervix at different stages, but one of them is probably the effective cooperation of the hospital with the gynecologists of Gothenburg. It should be noted in this connection that the hospital's cytological department was founded in 1950 and has continued to be the only department of its kind in Sweden. Referring to the five-year cure rate for cancer of the cervix, Leissner put it at 50.8% for a series of 459 patients treated in the period 1944 to 1948 inclusive. For patients in the first stage of the disease there was a five-year cure rate of 79%. In *Nordisk medicin* for Nov. 22, 1956, Dr. O. Kjellgren, of the same hospital, stated that in a series of 257 patients with cancer of the cervix false negative smears were observed in only 6%. The frequency of false positive smears varies with the degree of discrimination shown by different observers. Cytological tests have revealed cancer of the uterus in about 0.5% of the women thus examined.

**Campaign Against Smoking by the Young.**—The school medical authorities in Sweden have approved a campaign started by the National Association Against Tobacco on behalf of children and adolescents. A badge featuring a small white hand is being sold throughout Sweden and is to be worn by all in favor of this campaign. A score of physicians have undertaken to support the association, one of whose aims is to organize a tobacco clinic at which smoking addicts can learn to rid themselves of the habit.

# CORRESPONDENCE

## DEVELOPMENTAL DEFECTS

*To the Editor:*—Dr. Gruenwald has written (*J. A. M. A.* 162:1077 [Nov. 10] 1956) that an article by me in the July 14, 1956, issue of THE JOURNAL, page 1047, "should not go unchallenged," inasmuch as I show "disregard of the importance of the ever-present action of genetic factors in all living organisms." First, I would like to point out that I was challenging the "genetics-is-an-exact-science" shibboleth. In my article I had written: "Assertions that a race of monsters and sports is the likely price of discovery of nuclear fission are unsupported. The one indisputable effect upon the unborn is the development of brachycephaly and mental retardation as an acquired anomaly. . . . The practical demonstration is the direct effect of high dosage of ionizing radiation upon the mammalian conceptus and not a confirmation of dire speculations about mammalian mutations." To attack genetic speculations as something other than proved doctrine is not to disregard the importance of the ever-present action of genetic forces.

Almost 10 years ago (*Am. J. Pub. Health* 38:66, 1948) Gordon and I spelled out the basic issues as follows: "The speculation has been made that mutations, similar biologically to those produced in the fruit-fly by Muller, may take place as an aftermath of that experience [the bomb]. Should anomalies be observed in significant numbers within the immediate future [and they were], those occurring among infants of mothers pregnant at the time of the event would clearly represent acquired anomalies [and they clearly did]; those of future pregnancies present an impossible decision between nontransmissible injuries [congenital defects acquired as the result of maternal disease, in turn caused by the bomb's impact] and transmissible injuries—mutations—of the parental germ plasm."

Since an excess number of anomalies have not been observed in the offspring of surviving mothers pregnant again after the bombing of Hiroshima, no impossible decision has arisen. If they had occurred, the challenge of evaluating the new public health problem presented to the world would have involved many disciplines, as well as basic epidemiologic methodology, to take into account factors of dosage such as radiation intensity and distance from the hypocenter, as well as intrinsic factors of the exposed population—age, sex, degree of previous bomb-induced disease, and genetic characteristics, for example.

In the absence of positive findings, there has been far too much fruit-fly analogy advanced, in the attempt to establish the allegation of genetic hazard of nuclear eminations and that of x-rays taken for diagnostic purposes, by authoritarian pronouncement. Comparisons between insect and mammalian ecologies are strained to say the least. Speculation has been piled upon hypothesis, culminating in the estimate that 80,000 "harmful mutations" are the price of the bomb tests and the assertion advanced, as if it were a statement of fact, that diagnostic x-rays or bomb explosions will give rise to mutations unless the reproductive organs are somehow or other selectively shielded.

The geneticists who voted that the damage produced by radiation on the hereditary material is real cannot settle the quantitative aspect of the problem by a vote. Nor can mammalian ecology be bypassed by drawing upon that of insects. As for any effect upon the hereditary material of man and other mammals persisting for generations, the proposition is wholly speculative. Moreover, such a hypothetical proposition is meaningless unless it be formulated in quantitative terms; and, of course, it is nothing more than a hypothesis until scientifically tested in the laboratory with mammals rather than insects and with use of suitable controls.

I do not challenge the great importance of genetics. Dr. Gruenwald remarks that I have used but "one 'experimental model.'" I submit that a mouse model is more reasonable to use in studying the nature of congenital deformities in mammals than a Drosophila colony. Actually my colleague Dr. Philbrook and I have extended the study of anomalies of mice (in which cerebral and skeletal deformities, cleft palate, and ocular defects were induced in the middle and latter states of pregnancy) to the study of fish models. The early fish embryo corresponds to the amphibious stages of mammalian ontogeny and also allows access to eggs embryonating outside the mother. By scrubbing oxygen out of the water to the point of hypoxia (which is a final common path of many nonspecific stresses and which also presents the advantage that it can be quantitated) cyclopia and double monsters can be induced at early stages of differentiation. These matters are dealt with more definitively in an article to be published in the *Scientific American*. I mention them here because of points raised in the last part of Dr. Gruenwald's letter.

THEODORE H. INGALLS, M.D.
Department of Epidemiology
Harvard School of Public Health
Boston 15.

## HYPNOSIS AND ANESTHESIA

*To the Editor:*—I cannot agree with some of the statements of Crasilneck, McCranie, and Jenkins in "Special Indications for Hypnosis as a Method of Anesthesia" (*J. A. M. A.* 162:1606 [Dec. 29] 1956) wherein they state: ". . . it might be advantageous to have the conscious cooperation of the patient . . ." and in the next paragraph they state: ". . . some persons who are hypnotized are capable of entering the depth of hypnotic state necessary to produce sleep. . . ." These statements are contradictory and confusing. The term trance would have been more accurate, as hypnosis is not sleep.

In the last paragraph before the Summary and Conclusions the statements are made: "There are also risks involved in hypnotizing patients who have psychological problems. A careful psychiatric evaluation should be performed prior to the use of hypnosis." By a clear understanding with the patient that the trance is to be used for anesthesia only, and preventing any distortion of this motivation, and by the orientation of the hypnotist to the patient's need, any of the so-called psychological risks will be removed. This sort of prehypnotic preparation is of the utmost importance. I can think of nothing that would develop resistance in the patient more than a psychiatric evaluation or examination when hypnosis is to be used for anesthesia only. Long ago Bernheim "held that hypnotism was suggestion and that there was no marked difference between normal acts carried out under suggestion and acts brought about hypnotically." I have never had any difficulty in hundreds of inductions. I recognize that all illness has both physical and mental aspects, so all sick persons have to some extent a psychological problem. Their hypnotizability and acceptance of suggestions is in proportion, in many cases, to their motivation to recover. If I should find any resistance here, I would refer them to a psychiatrist, as their illness may serve some emotional need.

V. J. Meads, M.D.
606 Court St.
Portsmouth, Va.

## RECOGNITION OF VACCINE ANTIGENICITY

*To the Editor:*—In the article "Duck-Embryo Rabies Vaccine" in the Dec. 8 issue of The Journal, page 1373, the following reference should have been included: LoGrippo, G. A., and Hartman, F. W.: Antigenicity of β-Propiolactone-Inactivated Virus Vaccines (*J. Immunol.* 75:123, 1955), since these authors first recognized the virucidal activity of this compound. We were well aware of their work, and the omission was an accidental one for which we apologize.

C. G. Culbertson, M.D.
Director, Biological Research Division
Eli Lilly and Company
Indianapolis 6.

## ENDOMETRIOSIS

*To the Editor:*—The editorial on endometriosis (*J. A. M. A.* 162:575 [Oct. 6] 1956) is not in keeping with many of the known facts regarding this disease entity. the statement "it is likely to remain quiescent or even undergo some regression" is a frank understatement. My experience has shown that endometriosis definitely regresses during pregnancy. Thus the editorial thought of a cesarean hysterectomy for endometriosis is inconsistent with the conservative treatment advocated and is contraindicated from the standpoint of the observed behavior of this lesion. Physiological amenorrhea of pregnancy or the pregnancy equivalent induced by stilbestrol (Karnaky) has produced regressive changes so remarkable that operative treatment once endorsed by all gynecologists is declining in popularity and usage. Although I dislike belaboring the obsolete material in this editorial, it should be pointed out that the likelihood of finding bluish cysts in the posterior vaginal fornix, presumably having worked their way through from the cul-de-sac, is such a rarity as to be hardly worthy of mention.

Clayton T. Beecham, M.D.
155 W. Walnut Lane
Philadelphia 44.

## PLAGUE

*To the Editor:*—Dr. John Hugo Schaefer's recent comments about plague in The Journal for Dec. 22, 1956, page 1658, are most pertinent. I recall the incident of the case of bubonic plague evidently derived from infection from fleas that were on foxes. We had an epidemic of pneumonic plague, with a fair sprinkling of cases of bubonic plague, also, in the winter of 1924 and 1925 in Los Angeles, when I was the first assistant pathologist at the Los Angeles County Hospital. There were 33 fatal cases of pneumonic plague, as I recall it now, and about 6 or 8 of bubonic plague. I did a good many of the autopsies and my chief, Dr. George Darby Maner, who is still in Los Angeles, did half of them himself. It was a very trying experience. Since I have been here in Reno, I have known of two cases (from the Lake Tahoe area) of bubonic plague in humans in which the patients recovered. Those two cases were derived, probably, from infected ground squirrels at Lake Tahoe.

Lawrence Parsons, M.D.
St. Mary's Hospital
Reno, Nev.

## HYPERGLYCEMIA AFTER DRUG THERAPY

*To the Editor:*—Dr. B. W. Hiles, in the Correspondence section of the Dec. 29 issue of The Journal, page 1651, has presented observations of hyperglycemia and glycosuria in patients receiving chlorpromazine and has suggested the need for further investigation of these findings.

I should like to call attention to a report by Charatan and Bartlett on this subject that appeared in the April, 1955, issue of *The Journal of Mental Science*, page 351, and an abstract of which appeared in the Sept. 10, 1955, issue of The Journal, page 144. The authors, on the basis of a report of a hyperglycemic effect in man treated with chlorpromazine, carried out a series of glucose tolerance tests on schizophrenics before and after a test dose of chlorpromazine. They considered the effect to be due to depression of liver function or stimulation of adrenal cortex by chlorpromazine.

George X. Trimble, M.D.
Medical Director
St. Elizabeth Hospital
Youngstown 4, Ohio.

# MEDICAL LITERATURE ABSTRACTS

## INTERNAL MEDICINE

**Effect of Carotid Sinus Stimulation on the Electrocardiograms of Clinically Normal Individuals.** G. H. Heidorn and A. P. McNamara. Circulation 14:1104-1113 (Dec.) 1956 [New York].

The cardioinhibitory effects of carotid sinus stimulation were studied with the aid of electrocardiographic recordings in 40 active, clinically normal men between the ages of 25 and 58 years. Carotid sinus stimulation was carried out after a routine 12-lead electrocardiogram. Lead 2 was continuously recorded in the period preceding, during, and after stimulation. The bulb of the carotid sinus was first located on the right side and stimulated by pressure and mild massage for 30 seconds. Multiple areas were stimulated in order to eliminate anatomic variants if a significant response was not obtained. A similar procedure was followed on the left side.

Stimulation of the carotid sinus resulted in ventricular systole in 9 of the 40 persons studied. Other electrocardiographic changes consisted of sinoatrial bradycardia, a significantly lengthened P-R interval, a decrease in P-wave amplitude or disappearance of the P wave, and a shortening of the P-R interval. Stimulation of the carotid sinus caused clear symptoms in 10 patients. These consisted of minor, moderate, or severe lightheadedness; numbness and tingling in the left hand; severe nausea; syncope; and generalized muscular twitching. No electrocardiographic response was obtained on stimulation to either the right or the left side in 3 patients. These findings emphasize the importance of the carotid sinus reflex, even in the apparently normal person. They support the clinical observation that the criteria for the diagnosis of the hyperactive carotid sinus syndrome must be kept within the rigid bounds of an exact reproduction of symptoms on diagnostic carotid sinus stimulation. Electrocardiographic changes or the production of other symptoms is insufficient evidence to establish this diagnosis, as such changes are often present in the person who appears normal. The opinion that a hyperactive response indicates underlying cardiac disease has been reported in several publications. The authors' study suggests that this opinion should be accepted with much reservation. A standard technique of carotid sinus stimulation with control of the time interval of stimulation, and a nomenclature to be used in tabulating results, are suggested for use in further studies of the carotid sinus reflex.

**Buckling of the Great Vessels: A Clinical and Angiocardiographic Study.** I. Hsu and A. D. Kistin. A.M.A. Arch. Int. Med. 98:712-719 (Dec.) 1956 [Chicago].

A pulsatile tumor just above the right clavicle in the situation of the carotid has been diagnosed as an aneurysm, when postmortem examination disclosed it to be a tortuous common carotid artery. Records of 117 cases of kinked right common carotid or innominate artery or both were found in the literature. The authors studied 16 patients with buckling during the past 2 years. This group included 13 women and 3 men. The youngest patient was a woman of 34 with coarctation of the aorta; the other 15 were between 51 and 83 years of age. Hypertension was present in 9. Eight were obese and heavyset. The manifestations of buckling were pulsating mass at the base of the neck on the right side in 6 patients; pulsating mass bilaterally in 3; pulsating mass confined to the left side of the neck in 1; pulsating mass in the suprasternal notch in 2; pulsating bulge in the right lateral wall of the posterior pharynx in 2 (in 1 there was also a pulsating mass at the base of the right side of the neck); and widened superior mediastinum in 2, with 1 showing calcification of the vessel wall at fluoroscopy.

A review of the literature and the 16 patients in this study show that buckling of the great vessels is a benign condition. Surgery is not indicated. Buckling is a common condition; the frequency of diagnosis depends on the interest of the observer. The buckled vessels can be demonstrated by angiocardiography and if need be by direct carotid injection and thus differentiated from aneurysm. Isolated aneurysm of the common carotid near its origin is considered to be rare. When it does occur, it is usually an extension of an innominate aneurysm, which is the basic lesion. Aneurysm of the internal carotid presenting into the pharynx is likewise quite uncommon. The clinical features of special interest in the present study were as follows: (*a*) palpable left-sided buckling in the absence of its counterpart on the right side; (*b*) tracheal deviation secondary to a buckled vessel; (*c*) 2 buckled vessels side by side, resulting in a large pulsating mass that suggested an aneurysm; (*d*) 2 cases of a buckled right internal carotid artery. Since completion of this report, the authors have seen 5 additional patients (4 women and 1 man) with buckling of the right common carotid artery. Four had hypertension. Ages ranged between 48 and 73 years.

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The place of publication of the periodicals appears in brackets preceding each abstract.

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**Chagas' Disease: A Clinical, Epidemiologic, and Pathologic Study.** F. S. Laranja, E. Dias, G. Nobrega and A. Miranda. Circulation **14**:1035-1060 (Dec.) 1956 [New York].

The authors report on 1,520 patients in whom a diagnosis of American trypanosomiasis (Chagas' disease) was made in Bambuí, Minas Gerais, Brazil, between 1943 and 1955. One hundred eighty of the 1,520 patients had acute trypanosomiasis, which was nonfatal in 159 and fatal in 21. Myocardial damage was detected by electrocardiographic recordings in 18 (85.7%) of the patients who died; only 60 (37.7%) of the 159 patients who survived showed electrocardiographic abnormalities. Prolongation of the P-R interval, primary T-wave changes, low voltage of QRS, prolongation of Q-T interval, and associated ST-T changes were the most common electrocardiographic changes in the entire group of patients with acute trypanosomiasis. Autopsy was performed in 11 of the 21 patients. Six of the eleven patients were boys and 5 were girls; their ages varied 2 months and 4 years. Acute myocarditis was revealed by autopsy in all of them, and Trypanosoma cruzi was found in the myocardial fibers of all the patients. Some 1,340 patients, 650 males and 690 females, had chronic trypanosomiasis; 657 of these had chronic asymptomatic T. cruzi infection and 83.5% of these were between the ages of 11 and 50 years. The remaining 683 patients showed evidence of myocardial damage; 383 (56%) were males and 300 (44%) were females. Five hundred sixty (82%) of the 683 patients were between the ages of 11 and 50 years, and two-thirds were between the ages of 11 and 40 years. Complete right bundle-branch block, partial and complete auriculoventricular block, ventricular premature contractions, QRS abnormalities or primary T-wave changes, and abnormal P waves were common findings.

Triatomae infected with T. cruzi are widely distributed in the Western hemisphere, extending from the United States to Argentina. The knowledge of the incidence and severity of human infection with T. cruzi in most of the large endemic areas is still incomplete. At present, American trypanosomiasis (Chagas' disease) should be considered as an essentially cardiotropic infection, caused by T. cruzi, having an acute period with multiple reversible manifestations caused by involvement of various tissues and organs. The heart is affected in most of the patients. A prolonged chronic course follows, with late manifestations of progressive heart involvement (chronic Chagas' heart disease). Acute Chagas' heart disease may be defined as a reversible type of parasitic heart disease, caused by acute T. cruzi infection, occurring predominantly in infancy and childhood and anatomically characterized by an acute, diffuse, usually severe, specific myocarditis that eventually leads to heart failure without conspicuous irregularities of the cardiac rhythm. The authors' concept of chronic Chagas' heart disease is that of a progressive, usually severe type of heart disease, related to chronic infection with T. cruzi, preponderantly affecting men between the ages of 20 and 50 years, manifested clinically by the almost constant occurrence of disturbances in the formation and conduction of the cardiac stimulus and by congestive heart failure. Anatomically widespread inflammatory changes of the myocardium are usually accompanied by circumscribed lesions of the parietal endocardium and by slowly developing ischemic myocardial changes.

**The Diagnosis of Boeck's Sarcoid by Skeletal Muscle Biopsy: Report of Four Cases.** R. W. Phillips. A. M. Phillips. A. M. A. Arch. Int. Med. **98**:732-736 (Dec.) 1956 [Chicago].

This paper reports the results of random gastrocnemius muscle biopsy performed in 5 patients with sarcoidosis. Material containing granuloma consistent with Boeck's disease was found in 4 of the 5 patients. In 2 patients, biopsy of skeletal muscle was done in conjunction with biopsy of another site (skin and lymph node), which also gave pathological material consistent with sarcoid. In 2 additional patients muscle biopsy provided the only positive histological evidence, as there were no skin lesions, enlarged lymph nodes, or other areas suitable for biopsy. In another patient no pathological material was found in the muscle, although evidence of lung lesions was present, and biopsy of a lymph node in the supraclavicular area contained granulomas of sarcoid. None of the 5 patients had local findings referable to the muscle prior to the biopsy. The literature in regard to skeletal-muscle involvement in Boeck's sarcoid is reviewed. It is suggested that the incidence of involvement may be higher than so far reported and that further biopsy studies of skeletal muscle are needed before the true incidence of granuloma in muscle in this disease will be known. Skeletal muscle biopsy would appear to warrant further use as a diagnostic measure, especially in the patient suspected of having Boeck's sarcoid without skin lesions or involved peripheral lymph nodes.

**Indirect Evidence of the Contagiousness of Pulmonary Tuberculosis Treated with Isoniazid, from a Study of the Sources of Infection in Children with Initial Cases of Tuberculosis.** M. Kaplan, R. Grumbach and B. Dobrowolski. Presse méd. **64**:1809-1812 (Nov. 3) 1956 (In French) [Paris].

Two groups of children were studied as to the probable sources responsible for their initial infection with tuberculosis. The first group (A) consisted of 155 children treated from 1950 to 1952; the second group (B) consisted of 120 children treated from 1954 to 1955. Group A represented the period before isoniazid; group B, the period after. A third group of 76 children represents the year 1953, during which the use of isoniazid was becoming widespread. It was impossible to identify the source of the infection in 207 cases, and the difficulty was greatest in the oldest age-groups. In the 144 patients in whom the source was identified, it was found that there had been prolonged, familial ex-

posure in 116. In group B there were 20 instances in which the responsible adult was reported to have been treated for pulmonary tuberculosis, presumably with medicaments including isoniazid. The corresponding figure for group A was 21 cases of familial contact with adults reported to have been treated for pulmonary tuberculosis (with medicaments not including isoniazid). The difference is insignificant and shows no evidence that the proportion of primary infections in children has been reduced since the advent of isoniazid. In group B, three-fifths of the known instances of transmission from adult to child involved untreated cases. The data show the importance of separating adults with active tuberculosis from children who have not had either a primary infection or a vaccination with BCG.

**Natural Course and Prognosis of Juvenile Diabetes.** P. White. Diabetes **5**:445-450 (Nov.-Dec.) 1956 [New York].

Of 1,072 juvenile patients with diabetes mellitus treated at the Joslin Clinic in Boston up to Aug. 1, 1955, 879 (82%) have survived for more than 20 years; 169 (16%) died; and 24 (2%) were lost to follow-up. Of the survivors, 536 (61%) are now between the ages of 30 and 39 years; 158 (18%) are between 20 and 29; 176 (20%) are between 40 and 49; and 9 (1%) are over 50. The oldest survivor is 56. The predisposition of the juvenile patients to diabetes was hereditary. The problems of growth and development have largely resolved themselves. The successful control of former lethal factors such as coma, sepsis, and tuberculosis is shown conclusively by the fact that death has been caused by coma in only 1, by sepsis in 1, and by tuberculosis in 2 of the 169 patients who died. Nephropathy has replaced other causes of death (86 [50.9%] of the 169 patients died of nephritis). Although new data on the possible mechanism of production of vascular damage and its regulation are suggested, poor chemical control of diabetes remains an important contributing factor. Presently available appropriate mixtures of regular and intermediate-acting insulins in split doses control diabetes mellitus with greater facility than those used in the patients reported on. Programs to alter the course of diabetes, especially those applicable in the remission phase, are in progress.

**Primary Aldosteronism and Its Relationship to Diabetes Mellitus.** E. P. McCullagh. Diabetes **5**:443-444 (Nov.-Dec.) 1956 [New York].

McCullagh reports 3 cases of primary aldosteronism in a 44-year-old man and in 2 women aged 63 and 42 years. All 3 patients had proved adrenocortical tumors associated with an excess of aldosterone in the urine that was identified as the diacetate by fractionation of chloroform extracts of urine, using chromatography and ultraviolet spectrometric analysis. Each of the 3 patients had some evidence of abnormal carbohydrate metabolism. It is suggested that diabetic tendency in aldosteronism may be shown only by a glucose tolerance test. The incidence of diabetes mellitus in primary aldosteronism cannot be determined. It appears that the diabetes that does arise as a result of excess of aldosterone is mild. The diabetes did not disappear completely after the removal of the adrenocortical tumor in 1 of the 3 patients, yet there appeared to be no family history of diabetes.

**Insulin Resistant Diabetes with Insulin Antibodies: A Case Report.** T. Yankelowitch, S. Massry and S. Gitter. Diabetes **5**:457-461 (Nov.-Dec.) 1956 [New York].

The authors describe a case of insulin-resistant diabetes in a 49-year-old woman who required up to 1,500 units of insulin per day for control of glycosuria and acetonuria. No disturbances of thyroid, adrenal, anterior pituitary, or liver functions were found. The patient had repeated respiratory infections, and the insulin resistance persisted after their cure. Aberrations of the electroencephalogram were observed repeatedly in the patient, but their possible relationship to the insulin resistance was not established. The presence of an insulin-neutralizing factor in the serum of the patient was already suggested by the weak response to insulin in the tolerance tests. It was proved by the Lowell mouse test and by the rat diaphragm test, measuring glucose uptake and glycogen synthesis. Active and passive transfer skin tests with insulin revealed that the patient's serum contained skin-sensitizing antibodies. Hemagglutination resulted when the patient's serum was added to sheep red blood cells that had been treated with insulin-coated tannic acid; thus, the presence of insulin antibodies was demonstrated. Paper electrophoresis did not show increased gamma globulin values. The patient was instructed to take 300 units of insulin daily and 25 mg. of cortisone every second day, and she was placed on a diet consisting of 150 gm. of carbohydrate, 70 gm. of protein, and 70 gm. of fat.

**Spontaneous Hypoglycemia as an Early Manifestation of Diabetes Mellitus.** H. S. Seltzer, S. S. Fajans and J. W. Conn. Diabetes **5**:437-442 (Nov.-Dec.) 1956 [New York].

One hundred ten patients whose glucose tolerance tests were characterized by (1) a normal or slightly elevated fasting blood sugar level, (2) hyperglycemia that was prolonged for the first 2 hours or more, and (3) a sudden fall to hypoglycemic levels between the 3rd and 5th hours were observed. Seventy-five (69%) of these patients had complained of hypoglcemic symptoms such as weakness, nervousness, tremor, hunger, and sweating occurring several hours after meals. Forty-eight (44%) had a definite family history of diabetes mellitus, and 40 (36%) presented the combination of symptomatic hypoglycemia and a diabetic heredity. Symptomatic spontaneous hypoglycemia may be one of the earliest clinical manifestations of diabetes mellitus. The fasting blood sugar level is usually normal, and a glucose tolerance test is required to

make the diagnosis of diabetes. Several of the patients progressed from the early phase associated with hypoglycemia to the stage of obvious diabetes with persistent fasting hyperglycemia. The stimulative type of hypoglycemia associated with mild diabetes should be ranked as one of the most common forms of spontaneous hypoglycemia, since it is superseded only by functional hyperinsulinism with respect to frequent occurrence. The possibility of diabetes must be considered in any patient presenting symptoms of postprandial hypoglycemia. This possibility is greatly strengthened if the patient has a family history of diabetes. The findings described are diagnostic of diabetes mellitus with secondary hypoglycemia and should not be confused with functional hyperinsulinism, a condition in which hyperglycemia does not occur.

**Hypoglycemia in Primary Carcinoma of the Liver.** A. J. S. McFadzean and Yeung Tse Tse. A. M. A. Arch. Int. Med. 98:720-731 (Dec.) 1956 [Chicago].

Twenty-seven consecutive Chinese patients with primary carcinoma of the liver were investigated, particularly with regard to the presence of hypoglycemia. The diagnosis of cancer of the liver was confirmed by needle biopsy and by autopsy, performed subsequently on all but 3 patients. Observations on 2 other patients who were observed in consulting practice and who had called the attention of these authors to the association of hypoglycemia and liver cancer are included in this report. Twenty-five of the 29 patients had massive hepatomas and 4 had cholangiocarcinomas. Persistent hypoglycemia was encountered in 9 of the patients with hepatoma. Hypoglycemia in primary carcinoma of the liver is therefore far from being a rarity. In none of the patients with hypoglycemia did the intravenous dextrose tolerance test give a plateau curve. It is concluded that the hypoglycemia is fundamentally distinct from that reported in other diseases of the liver. The rate of disappearance of dextrose injected intravenously in each of the patients with hepatoma was not significantly different from that encountered in healthy controls even when the test was repeated at intervals throughout the course of the disease, including periods in which liver function was grossly deranged. In contrast, in each of the 4 patients with cholangiocarcinoma, a plateau curve developed relatively early in the disease. It is concluded that the intravenous dextrose tolerance test in patients with hepatoma yields fundamentally different results from those encountered in other diseases of the liver, including cholangiocarcinoma.

The fall in the serum inorganic phosphorus level during the intravenous dextrose tolerance test in the absence of hypoglycemia varied from patient to patient and in the same patient from time to time. Following the onset of hypoglycemia, however, the response was constant in each case, and in all it was less than 10%. It is concluded that, in the absence of a significant fall in the serum inorganic phosphorus level, the dextrose is being diverted away from peripheral utilization and that the tumor must be responsible in whole or part for the diversion. This diversion results in depletion of the glycogen reserves in the residual liver. The demand for dextrose by the tumor persists in the fasting state; such reserves of glycogen as are present in the residual liver are rapidly exhausted, and the demand is met by gluconeogenesis. The natural progress of the disease is toward progressive increase in demand with coincident reduction in supply. Once demand exceeds supply, hypoglycemia results. The demonstration of significant quantities of glycogen within the hepatoma in the presence of hypoglycemic levels in the peripheral blood suggests that the glycogen within the tumor is not available to the body economy. The administration of cortisone raised the fasting blood sugar level to within normal limits in 2 of 3 patients with hypoglycemia, and it is concluded that cortisone may have a place in the management of such cases.

**Clinical Course of Gastric Cancer According to a Series of 540 Personal Cases.** F. Warmoes. Acta gastroenterol. belg. 19:753-756 (Nov.) 1956 [Brussels].

The author reports on 540 patients with gastric cancer; 130 (24%) had had symptoms of various gastric diseases for more than 3 years before a diagnosis of cancer was made; the rest had had no previous gastric disturbances. Of these, 272 (50%) had had symptoms of gastric cancer for less than 6 months; 69 (16.8%) for 6 to 12 months; and the rest for 1 to 3 years. The patients with previous gastric diseases had had no symptoms for several years before those of gastric cancer appeared. The duration of development of gastric cancer was easy to determine in the patients with no previous history of gastric disease and in those who had had no gastric disturbances in the years just preceding the diagnosis of cancer. This averaged 7 months. The author's experience does not agree with the statement that the development of gastric cancer is a prolonged process.

## SURGERY

**Carcinoma of the Esophagus: A Review of 381 Cases Admitted to Toronto General Hospital 1937-1953 Inclusive.** R. A. Mustard and O. Ibberson. Ann. Surg. 144:927-940 (Dec.) 1956 [Philadelphia].

The 381 patients with carcinoma of the esophagus admitted to the Toronto General Hospital during the period from 1937 to 1953 inclusive included 242 men (63.5%) and 139 women (36.5%). The average age of the patients was 62.9 years; the women were on the average somewhat younger. The tumors were located most frequently in the hypopharynx. Only 8 of the entire series of patients survived 5 years: in 4 of these the lesions were in the hypopharynx, 2 had adenocarcinomas of the abdominal esophagus, and only 1 had a squamous cancer of the thoracic esophagus. Women have a slight advantage over men as regards the length of survival. Only 2 of the 87 untreated patients survived 2 years, and both of these were dead 6

months later. Various forms of palliative "ostomies" were carried out in 76 patients, but only one of these lived longer than 2 years, and 6 survived 1 year. The authors question the value of gastrostomy for either symptomatic relief or for the prolongation of survival. They prefer a substernal by-pass procedure, using either the jejunum or colon to restore the ability to swallow for those patients who are able to tolerate the operation.

There was one 5-year survivor among the 125 patients who received only high voltage irradiation. This patient had a squamous carcinoma of the posterior wall of the hypopharynx. Experience with patients treated since 1953 by the cobalt "bomb" has, however, seemed somewhat more favorable. It has been the impression that most patients managed in this way receive at least temporary palliation, while a few may have their primary tumor obliterated. The authors feel that, since so few successes are obtained with surgery, irradiation therapy should be further explored for esophageal cancer. A surgical attack on the tumor was made in 133 patients, in 100 of whom resection was accomplished. There were 48 hospital deaths following operation. Of the 36 who survived the completed excision and reconstruction of the esophagus, 7 (about 20%) survived 5 years. The authors are sceptical of the chances of increasing the 5-year survival rate by more radical excision. They feel that the major objective in regard to surgical treatment should be a reduction of operative mortality by more careful selection of cases for exploration and more prompt recognition of nonresectability. The ability of cobalt radiation therapy to provide temporary palliation should be exploited in patients considered unsuitable for excision. Palliative surgical management should, whenever possible, consist of a "by-pass" procedure to restore swallowing; gastrostomy should be reserved for a last resort when all other measures have failed or are contraindicated.

**Hypophysectomy in Advanced Breast Cancer.** B. J. Kennedy, L. A. French and W. T. Peyton. New England J. Med. **255**:1165-1172 (Dec. 20) 1956 [Boston].

Thirty-four patients with advanced breast cancer were selected for total hypophysectomy. In 2 of these the operation was discontinued because of profuse bleeding from metastatic carcinoma of the skull and meninges at the site of the bone flap. Four patients recently operated on were not included in this report, and so there remain 28 for the analysis of the results of hypophysectomy. Of these, 18 experienced objective regressions similar to those noted with other forms of hormone therapy. Improvement was manifested by recalcification of osteolytic metastases, decrease in size of pulmonary lesions or disappearance of pleural effusion, disappearance of cutaneous lesions and lymph nodes, decrease in the size of the liver, and reduction of an elevated serum alkaline phosphatase level due to liver metastases. Recalcification of osteolytic lesions was noted in 12 patients, and reduction in size or disappearance of pulmonary or pleural metastases in 5, of cutaneous lesions in 5, of enlarged lymph nodes in 2, of liver metastases in 2, and of a metastatic lesion compressing the spinal cord in 2. In the other 10 patients there was no objective evidence of improvement, but 2 showed evidence of improvement in a metabolic study, with decrease in hypercalcemia and hypercalciuria, increase in the serum alkaline phosphatase level consistent with bone regeneration, and relief of pain. One of these 2 patients died of meningitis 22 days after operation. It appears that the growth rate of the breast cancer had been favorably altered in both cases.

Subjective improvement was noted in 20 patients. This consisted of an increased feeling of well-being or relief of pain. In 4 patients in whom striking relief of pain occurred, there was no objective evidence of regression. One patient who was asymptomatic experienced no change in subjective feelings. In 7 patients there was no evidence of either objective or subjective improvement after the hypophysectomy. The longest sustained remission was 20 months. The average survival of patients demonstrating tumor regression far exceeded that of those without improvement. All patients who had undergone castration for metastatic breast cancer, and who had responded to castration, subsequently, when the disease progressed, had a regression after hypophysectomy. Hypophysectomy eliminates the pituitary hormones and suppresses ovarian and adrenal functions in a way comparable to the removal of these glands. In view of the favorable responses after hypophysectomy, the concomitant adrenal atrophy, and the ease in managing the patient, it appears that hypophysectomy is to be preferred to adrenalectomy in the treatment of advanced breast cancer. There is insufficient evidence, as yet, that hypophysectomy should be performed as the initial endocrine treatment for patients with metastatic breast cancer.

**The Selection of Patients for Radical Mastectomy.** G. B. Sanders and D. W. Kinnaird. J. Kentucky M. A. **54**:1047-1055 (Dec.) 1956 [Louisville].

Radical operations for the cure of breast cancer must be applied to patients with the disease in its early stages. Even in these early stages the operation if for cure must be unusually extensive to succeed. Such an extensive operation, designed to remove not only axillary spread but in addition cancer deposits in the supraclavicular fossa, mediastinum, and internal mammary lymph node chain, is mutilating, costly and generally unpopular. More careful selection of patients suitable for such an operation is mandatory and can be achieved by a technique of multiple sampling devised by Haagensen of New York City and called "triple biopsy." The 1st step consists of careful, gentle biopsy of the primary site in the breast, removing only a wafer slice of the lesion, unless the lesion is less than 1 cm. in diameter. If grossly positive, the biopsy site is cauterized, meticulously closed with complete hemostasis, and sealed. A quick frozen section is resorted to if any doubt exists as to the presence of cancer. The 2nd step consists of a vertical incision made over the first 3 homolateral interspaces, about

1 fingerbreadth from the sternum, and the contents of the first 3 interspaces are completely removed and sent to the laboratory for paraffin section. If no gross cancer is found in the interspaces the incision is meticulously closed and sealed, and as a 3rd step a transverse incision is made over the inner third of the homolateral clavicle. One or 2 subclavicular nodes (Halsted's nodes) in close relationship to the axillary vein as it dips beneath the clavicle are secured, and these and adjacent areolar and fatty tissue are sent to the laboratory for study. In addition to the triple biopsy, a bone-marrow biopsy should be obtained from the homolateral iliac crest. The patient is returned to the ward, and results of the studies, ready in 24 hours, are awaited. This short interval is deliberately permitted to elapse between biopsy and the performance of the radical operation for cure.

Patients showing invasion of either the supraclavicular fossa, Halsted's nodes, or the internal mammary chain are unsuitable for radical mastectomy. Patients who have an equivocally positive bone marrow but whose triple biopsy is otherwise negative may be accepted for radical mastectomy. Failure to consider a patient suitable for ultraradical mastectomy does not imply that the patient is unsuitable for surgery. Such a patient may well become a candidate for simple mastectomy to be followed by intensive x-ray irradiation and subsequently by other methods of inhibiting or delaying cancer growth by hormonal alteration and chemotherapy. The authors' results with the treatment of breast cancer by ultraradical mastectomy according to Haagensen's techniques, covering a period of 7 years, are presented, but they do not show any definite trends of statistical significance. Five unusual or complicated cases of breast cancer are reported in which triple biopsy combined with bone marrow biopsy was particularly helpful.

**Ligation of the Internal Mammary Arteries and Its Effect on Myocardial Insufficiency.** G. De Marchi, M. Battezzati and A. Tagliaferro. Minerva med. 47:1184-1195 (Oct. 17) 1956 (In Italian) [Turin, Italy].

Ligation of the two mammary arteries in the second intercostal space was performed in 18 patients with myocardial insufficiency. The results were excellent in patients with myocardial sclerosis due to coronary sclerosis and with noncongestive forms of insufficiency. Satisfactory results were observed in patients with noncongestive myocardial insufficiencies due to hypertension or myocarditis. The authors think that the treatment may also benefit patients with congestive myocardial insufficiencies. Electrocardiograms showed that tachycardia was restored to normal rhythm in all patients in whom it was present. Atrial fibrillation remained unchanged in 3 patients who showed it before the treatment. Extrasystoles disappeared in 2 of 3 patients, and a marked reduction in the frequency of the extrasystoles occurred in the 3rd patient. Conduction disturbances remained unchanged. Signs of ischemia, present in 7 patients, disappeared in 4 and diminished in 1. Signs of ischemic lesions present in 2 patients disappeared. Signs of old infarct present in 5 patients remained unchanged. Ballistocardiograms showed great improvement in the values of myocardial kinesis. The volume of the heart diminished in some patients. Myocardial efficiency improved in all patients but 1.

**Hemorrhage as a Complication of Gastro-enterostomy.** W. E. Mydland, L. G. Bartholomew and D. O. Ferris. Ann. Surg. 144:950-952 (Dec.) 1956 [Philadelphia].

Gastroenterostomy was a favorite procedure for the treatment of duodenal ulcer for many years, being employed at the Mayo Clinic in about 70% of the surgically treated patients with duodenal ulcer from 1928 through 1935 and remaining the method of choice until 1940. It was favored because it was thought to protect the patient against future peptic ulceration and to give reasonable protection against hemorrhage. Recent experiences with severe gastrointestinal hemorrhages occurring in individuals with gastroenteric stomas suggested a resurvey of this problem. Of 1,611 patients who had gastrointestinal hemorrhage and who were observed at the Mayo Clinic in the 10-year period 1945 through 1954, 100 (6.2%) had undergone gastroenterostomy previously. Gastrojejunitis or gastrojejunal ulcer was responsible for the hemorrhage in at least 72 of the 100 patients. Since the detection of these two entities often requires laparotomy, it is probable that many of the 22 patients in whom the cause of bleeding was undetermined would have been found to have gastrojejunitis or gastrojejunal ulcer had laparotomy been performed. In addition to the 2 main causes of hemorrhage following gastroenterostomy, less frequent causes are unhealed gastric and duodenal ulcers, erosive gastritis, and jejunogastric intussusception. Bleeding following gastroenterostomy is of greater magnitude than previously recognized, as 35% of the patients in this series were classified as having had a severe hemorrhage. That bleeding may occur as a late sequela of gastroenterostomy is evidenced by the fact that 45% of the patients had a hemorrhage 10 or more years after operation.

**Evaluation of the Use of a Segment of Jejunum to Replace the Stomach Following Total Gastrectomy.** E. A. Free, M. Mannix Jr. and J. M. Beal. Ann. Surg. 144:941-949 (Dec.) 1956 [Philadelphia].

In 25 patients who were subjected to total gastrectomy for malignant gastric neoplasms, gastrointestinal continuity was restored by means of a segment of jejunum, which was interposed between the esophagus and duodenum. Three patients died and 11 had complications in the period following the operation. Ten patients survived for more than 6 months after the operation and were evaluated with regard to their gastrointestinal function. While only limited conclusions can be drawn from this small number of cases, it does appear that the interposition of a segment of jejunum can be employed as a method of restoration of gastrointestinal continuity after total resection of

the stomach without evident increase in the operative mortality for total gastrectomy. It is also associated with a low incidence of complications in the period immediately following operation. Regurgitation of upper gastrointestinal secretions has been prevented by interposition of the jejunal segment, and esophagitis has been absent in this group of patients. A satisfactory nutritional status has been maintained by the patients in whom recurrence of the malignant neoplasm has not occurred. The low rate of complications attests to the suitability of the jejunum as a bridge between the esophagus and the duodenum.

**Relapsing Pancreatitis Secondary to Choledocholithiasis.** J. M. Howard and G. L. Jordan Jr. A. M. A. Arch. Surg. 73:960-964 (Dec.) 1956 [Chicago].

Whereas much of the present-day thought concerning the etiology of acute pancreatitis stems from the autopsy report by Opie, who found a common-duct stone in a patient dying with acute pancreatitis, the experience accumulated since that time demonstrates that mechanical obstruction of the ampulla of Vater by stones occurs in a relatively small percentage of patients with pancreatitis. Nevertheless, if either the "common-channel theory" or the theory that pancreatitis results from simple obstruction of the pancreatic duct is tenable, it appears that common-duct stones may be a definite etiological factor. Since obstruction resulting from biliary calculi is characteristically intermittent, one might anticipate recurrent attacks of pancreatitis until such stones are removed. The authors found that at least 40% of 200 patients with acute pancreatitis treated at the Jefferson Davis and Veterans Administration Hospitals since 1949 have had more than one attack. In this group of patients, 4 repeatedly had classic attacks of acute pancreatitis until a common-duct stone was identified and removed. Each patient was treated by cholecystectomy and choledochotomy. There were no postoperative complications. All have remained asymptomatic. A review of the literature corroborated that a common-duct stone may be an etiological factor in recurrent attacks of pancreatitis. Removal of such calculi has been associated with good clinical results. When biliary calculi are present in association with pancreatitis, a thorough exploration of the common duct is indicated at an elective period.

**Management of Hematogenous Pyogenic Osteomyelitis.** J. Kulowski. Surgery 40:1094-1104 (Dec.) 1956 [St. Louis].

The natural clinical history of osteomyelitis is initiated by a bacteremia and a thromboembolic process in or near a bone. This relationship between the superimposed general and local infection is fundamental for all variants of the disease. The outcome will depend upon the intensity of the bacterial infection, the defensive mechanisms of the body—humeral and cellular—and the extent and quality of the local lesion. Three patterns of the disease may be expected: abortive, arrestive, and suppurative forms. In the abortive type, the disease has not gone beyond the stage of bacterial seeding and both the general and local infections have been controlled—spontaneously or by treatment. The patient gets well without residual bony changes. This happens only in the 1st or 2nd weeks of the disease. The clinical episode is then closed, but the patient ought to be checked later on for possible "silent foci" in bone (a Brodie-like lesion). The next stage implies that bacterial fixation has occurred in the bone. An arrestive and/or nonsuppurative lesion means that the local process is under control, as well as the general infection. Cellular defensive action has prevented frank suppuration, and the resultant bony lesion is a bland one—an infarct. In arrestive forms, aside from possible future flare-ups, a complete restitution of bone may be expected so long as mechanical protection is provided (brace or cast) until this occurs. Arrestive forms of osteomyelitis may be considered midpoints between abortive and suppurative lesions. Suppuration represents the victory of infection over the local cellular defense; it may or may not be associated with exfoliation of bone.

The author discusses the clinical lesions of the past by citing his own analysis of the charts of 72 patients with acute hematogenous pyogenic osteomyelitis treated before the advent of chemotherapy. He emphasizes that 2 developments brought the clinical life history of hematogenous pyogenic osteomyelitis into a clear focus and understanding: the principle of delayed operative interference, and, later, chemotherapy for the control of the general infection. Chemotherapy has contracted the clinical history of hematogenous osteomyelitic (pyogenic) to a small group of cases in which medical and surgical treatment may be integrated to a very high level of effectiveness. Two critical areas occur in the evolution of the disease under chemotherapy: suppuration and exfoliation of bone. The latter has no surgical significance unless it is accompanied by suppuration. Operation is always delayed until suppuration is clinically evident.

**Tietze's Syndrome: A New Entity in the Differential Diagnosis of Anterior Chest Wall Swelling.** G. H. Frey. A. M. A. Arch. Surg. 73:951-954 (Dec.) 1956 [Chicago].

Tietze's syndrome, which was first described in 1921, manifests itself by a usually unilateral, painful, benign, smooth, nonsuppurative swelling of the sternoclavicular or 1st to 6th sternocostochondral junction. The author describes observations on 4 patients with this disorder and cites previous reports. The syndrome is characterized by a sudden or gradual onset of anterior upper chest pain, associated with swelling of the involved costal cartilage. The pain usually is intermittent and lasts from a few days to weeks, while the swelling persists for months to years, the course of the disease being characterized by exacerbations and remissions. The etiology of Tietze's syndrome is unknown. Various theories have been advanced, but could not be proved by subsequent investigation. In establishing the diagnosis of Tietze's syndrome, a

variety of disorders has to be excluded, such as breast carcinoma; chest wall neoplasms; osteomyelitis of the ribs of pyogenic, tuberculous, or typhoid origin; syphilitic periostitis; mediastinal tumors; aneurysms; occult rib fractures; Hodgkin's disease; lymphomas; chondroma; Kahler's disease; and plasmocytoma. Presternal edema following mumps, intercostal neuritis, contusion, chest deformity, and rheumatoid arthritis also have to be considered in the differential diagnosis. Tietze's disease can be distinguished from these conditions by roentgenologic, bacteriological, histological, chemical, and serologic procedures and its almost uniform symptomatology. The treatment of Tietze's syndrome is mainly symptomatic, i. e., use of analgesics and salicylates, local heat application, and reassurance. Local procaine injections may be of temporary value. X-ray therapy to the involved site is not recommended. Resection of the cartilage has been performed as a last resort in a few persistent cases, with complete cure.

**Coxa Magna.** W. Mol and B. B. Molenaar. Arch. chir. neerl. 8:242-250 (No. 3) 1956 (In German) [Arnhem, Netherlands].

The authors describe observations on 4 patients with relative or absolute enlargement of the head of the femur (coxa magna). The patients were children ranging in age from 7 to 11 years. Two had had Perthes' disease (osteochondrosis of capital epiphysis of femur), 1 had congenital luxation of the hip, and the 4th had had coxitis and osteomyelitis of the acetabulum. The authors do not regard coxa magna as a disease entity but rather as a symptom that may result from various causes and occurs in different diseases. The enlargement may be caused by ischemia as well as by active hyperemia. It occurs after subacute arthritis, osteochondrosis of capital epiphysis of femur, reposition of congenital dislocation of the hip-joint, trauma, and other lesions that may impair the circulation of capsule, bone, or cartilage. Generally, the more traumatic the intervention for these disorders the poorer the result. The authors advise against damaging diagnostic interventions, such as exploratory excision of the articular capsule. Coxa magna is analogous to the enlargement of the epiphysis, which occurs in tuberculosis of the knee joint and which seems to be caused by the active hyperemia involved in inflammation. Coxa magna usually occurs as a sequel after mild inflammations, the hyperemic phase of inflammation being followed by proliferation of connective tissue.

**The Gastric Ulcer Problem.** J. L. Sawyers, J. E. Adams and H. W. Scott Jr. J. Louisiana M. Soc. 108:433-440 (Dec.) 1956 [New Orleans].

One hundred eighty-six patients with gastric ulcer were treated at Vanderbilt University Hospital in Nashville, Tenn., between 1940 and 1954. Twenty-two (11.8%) of the 186 patients had a malignant ulcer and 21 (95%) of these underwent surgical treatment; 1 with an ulcer on the lesser curvature of the stomach 3 cm. proximal to the pylorus was treated entirely by medical management and was entirely asymptomatic after 2 weeks of treatment and remained so for the next 8 months; carcinoma was revealed by autopsy. Four of the 21 patients operated on underwent a total gastrectomy, 11 a subtotal gastrectomy, 5 an exploratory laparotomy and a biopsy, and 1 a gastroenterostomy. Almost one-third of these patients did not have a resectable tumor at the time of the operation. Only 8 (38%) of the 21 patients were operated on within 2 months of the time that a gastric ulcer was definitely diagnosed. All 5 patients who were operated on 12 months or more after the diagnosis of gastric ulcer had been made were followed clinically and roentgenologically with medical therapy for their ulcers. Two were operated on because of radiologically proved recurrence, 2 because of increasing pain, and 1 because of symptoms of obstruction. Four of the 15 patients with a resectable tumor survived the operation for more than 5 years. Three survived the operation for periods varying from 2 to 5 years. Five died within less than 1 year and 3 within periods varying from 1 to 2 years.

One hundred sixty-four patients had a benign gastric ulcer; 92 were treated medically and 72 underwent surgical treatment. Almost one-third of the 72 were operated on because of a strong suspicion of malignancy, and another third were operated on because of intractability, hemorrhage, or obstruction. Three patients operated on died in the hospital, and death was considered to be the direct result of the operation in 2, an operative mortality rate of 2.8%; the 3rd patient died of cardiac failure. Fifty-seven of the 72 patients were operated on within 2 months or less after the diagnosis of gastric ulcer was made. Fourteen of the 92 medically treated patients were lost to follow-up, and 36 were followed for less than 2 years, 19 for from 2 to 5 years, 16 for from 5 to 10 years, and 7 for 10 years or more. Thirteen (24.1%) of the 78 followed-up patients had recurrence of gastric ulcer, and the incidence of recurrences was the highest among the patients who were followed up for 10 years or more. In contrast, the incidence of recurrence after surgical treatment of benign gastric ulcer was quite low (2.6%), and the long-range results were generally good. Only 23 (26%) of the medically managed group could be adequately followed despite the policy at the Vanderbilt University Hospital during the 15 years of the authors' study of strict medical regimen with frequent x-ray examinations to determine healing of the ulcer within the first 6 weeks after diagnosis. It is not possible by present diagnostic methods to determine whether a gastric ulcer is malignant or benign until it is surgically removed and studied microscopically. The incidence of recurrence and unfavorable results increases in direct proportion to the length of follow-up in the medically managed gastric ulcer group. The long-range results of partial gastric resection for benign gastric ulcer are generally good. Patients with

ulcerating lesions of the stomach should, therefore, have surgical treatment as soon as the diagnosis is made, without a preliminary period of medical management.

## NEUROLOGY & PSYCHIATRY

**Para-infectious Encephalomyelitis and Related Syndromes: A Critical Review of the Neurological Complications of Certain Specific Fevers.** H. G. Miller, J. B. Stanton and J. L. Gibbons. Quart. J. Med. **25**:427-505 (Oct.) 1956 [Oxford, England].

The authors reviewed the literature relating to neurological complications of measles, chicken-pox (varicella), German measles (rubella), mumps, scarlet fever, and whooping-cough (pertussis) in an attempt to clarify certain aspects of the natural history of these complications. They concluded that the incidence of neurological complications in the infectious diseases considered ranges from 1:5,000 for German measles to 1:800 for scarlet fever. The incidence is undetermined, but probably higher, in pertussis. In measles, rubella, and varicella the syndromes reported are polyradiculitis, myelitis, and encephalitis, the last-named complication accounting for 90% of cases. In mumps and scarlet fever the same syndromes occur, encephalitis predominating, but this group of syndromes yields first place in frequency to lymphocytic meningitis. In pertussis, fulminating encephalopathy is the usual, if not the only, manifestation.

The only clinical features of definite prognostic significance are coma and convulsions, both of which are of serious import. Hemiplegia and extensor plantar responses may also worsen the prognosis. The immediate and long-term prognosis varies slightly with the individual fevers. Encephalitis in rubella, measles, and mumps has a somewhat higher mortality (20 to 25%) than in scarlet fever (13%) or varicella (10%). On the other hand, sequelae are much less common (2 to 5%) in rubella than in varicella (20%), measles (35%), or scarlet fever (45%). Changes in the spinal fluid do not always occur, but when present they take the form of a variable pleocytosis and moderate increase of protein. These changes have no prognostic significance and no relation to the type or severity of neurological disorder apart from the albuminocytological dissociation seen in some patients with polyradiculitis. The pathological findings bear a definite relationship to the duration of the illness before death and show a temporal evolution from early vascular involvement to a fully developed picture of perivenous infiltration and demyelination.

**Rubeola Encephalitis: Report of Two Grave Cases.** K. Ytrehus. Tidsskr. norske lægefor. **76**:689-691 (Oct. 1) 1956 (In Norwegian) [Oslo].

In the first of 2 cases of rubeola encephalitis the patient survived, although his temperature rose to 42 C (107.6 F). Definite sequels in the form of impaired memory and reduced power of concentration were still present over a year after the illness. The second patient, with extensive paralysis and disturbances of sensation, died during the acute phase. Autopsy showed hyperemia and moderate inflammatory changes in the medulla oblongata and the meninges. Tracheotomy, done in both cases, is believed to have been life-saving in the 1st case and to have prolonged life in the 2nd. Encephalitis, although a rare complication in rubeola, may be observed comparatively often during epidemic outbreaks of the disease.

**Combined Therapy in Tuberculous Meningitis.** G. Miörner, O. Gabinus and G. Högberg. Nord. med. **56**:1526-1528 (Oct. 18) 1956 (In Swedish) [Stockholm].

Fourteen of 15 cases of verified tuberculous meningitis since 1952 were treated by a combination of streptomycin given intramuscularly and intrathecally and PAS given intravenously. In the 1st case PAS was given only by mouth. In 11 cases isoniazid by mouth was also given during all or part of the time of treatment. Two patients died after 9 and 19 days' treatment respectively. Thirteen patients were discharged as cured. In 9 cases treatment with PAS or PAS and isoniazid was continued after discharge. Relapse occurred in 2 cases after 4 and 8 months respectively; repeated treatment was given, and the patients are now free from symptoms. Neurological symptoms due to the meningitis occurred in 5 cases. In 1 case, where full treatment was begun rather late in the course, there are sequels in the form of paralysis of the legs, and the patient who received PAS only by mouth has persisting headache; otherwise, the neurological symptoms disappeared during continued treatment. Five patients have vestibular injury and 1 patient has a slight reduction of vestibular function due to streptomycin. The average period of observation after discharge was 2 years and 2 months. In tuberculous meningitis it is of greatest importance promptly to attain full therapeutic effect in order to prevent irreparable damage to the central nervous system. Intrathecal streptomycin therapy can probably be dispensed with if early treatment is applied with PAS given intravenously together with isoniazid by mouth and steptomycin intramuscularly. To reduce the danger of recurrence the antituberculous treatment should be continued for at least a year.

**Considerations on the Increased Incidence of Virus Meningitis.** H. Hauser. München med. Wchnschr. **98**:1565-1567 (Nov. 16) 1956 (In German) [Munich, Germany].

Virus meningitis is becoming more frequent and sometimes occurs in epidemics. While 51 patients with virus meningitis were observed in Munich in the course of one year, only 15 patients with bacterial meningitis, 6 with paralytic poliomyelitis, and 2 with tuberculous meningitis were observed during the same period. Virus meningitis resembles the preparalytic stage of poliomyelitis in epidemiology and in the cerebrospinal fluid changes. It is generally mild and pro-

duces no complications. The 2 diseases cannot be differentiated when there are no paralytic symptoms. Treatment of virus meningitis consists of bed-rest and the administration of analgesics and antipyretics. Antibiotics have no effect on the course of the disease.

## GYNECOLOGY & OBSTETRICS

**Rh Factor: Considerations on Some Clinical Cases.** C. R. Cabello Soto and M. Marecilla Iñíguez. Rev. españ. obst. y ginec. 13:271-278 (Sept.-Oct.) 1956 (In Spanish) [Valencia, Spain].

Six hundred thirty-two pregnant women were observed in a given period of time (not specified by the authors) in the Provincial Maternity Hospital of Santander. Fifty-eight were Rh-negative. Three women in this group and 7 in another group were sensitized to the Rh factor. Three had had blood transfusion or intramuscular injections of the husband's blood in their first pregnancy and had erythroblastotic fetuses. Six women had some of the following treatment during pregnancy: (1) antigen therapy, (2) progesterone by mouth in daily doses of 10 mg. and intramuscular injections of vitamin K in weekly doses of 5 mg., and (3) early cesarean section. In all cases the treatment failed. Dead, hydropic, edematous, or acutely icteric fetuses or infants who survived for a few hours after birth were born. The only infant whose life was spared was apparently normal at birth. The mother was Rh-negative and the father and the infant were Rh-positive. Acute jaundice appeared on the 2nd day after birth. The infant had exchange transfusion. The authors conclude that there is no treatment to protect the infant against the dangers of sensitization of the mother to the Rh-factor. All the treatments that have been advised are not reliable. They failed in the authors' experience.

**Fibrin Emboli of the Lungs with Afibrinogenemia After Cesarean Section: Without the Presence of Amniotic Epithelial Squames.** E. S. Olson. Wisconsin M. J. 55:1315-1318 (Dec.) 1956 [Madison].

A 21-year-old woman was hospitalized for her 3rd cesarean section and tubal ligation. The blood pressure gradually dropped from 124/60 to 84/70 mm. Hg in 18 hours, and the pulse rate increased to 130 per minute. Exploration was done, and a slipped suture on a vessel on the fallopian tube was found. The vessel was again ligated. During this second operation no pulse or blood pressure was obtainable; then the blood pressure rose to 74/40 mm. Hg, and one-half hour later it was 0/0 mm. Hg and remained so for one hour. After this it varied between 0/0 and 132/80 mm. Hg. Exploration was done again 24 hours after the cesarean section. There was considerable bleeding into the subcutaneous and retroperitoneal tissues, with a moderate amount of blood present in the peritoneal space. A hysterectomy was done in an attempt to control the hemorrhage. The patient died almost immediately in spite of supportive therapy. One fibrinogen determination had been done before the second operation. It was 0.096%. Two grams of fibrinogen had been given at that time.

The postmortem examination showed a considerable amount of incoagulable blood in the subcutaneous tissue, with extravasated blood subperitoneally. There was free blood in the peritoneum. The atelectasis should have been avoided by instituting artificial respiration with wide excursions of the chest. The fibrin emboli in the lungs were due to the absorption of thromboplastin, which could have been from the decidua, placenta, or amniotic fluid. This resulted in afibrinogenemia and the presence of plasmin. Plasmin reduces those factors concerned with the coagulation of the blood such as prothrombin, fibrinogen, and fibrin. Operative procedures should be avoided until coagulation of the blood has been restored. Hysterectomy is probably seldom, if ever, indicated. In the case presented, ciliated epithelium from the fallopian tubes was noted in the capillaries of the lungs. The absorption of thromboplastin caused the afibrinogenemia in this case. The condition developed in the absence of amniotic fluid epithelial cells in the lungs. This indicates that the cellular elements are not always the important factor in this condition.

**Corticotropin in Mammary Fibrosis: Preliminary Report.** H. Schartum-Hansen. Nord. med. 56:1559-1560 (Oct. 25) 1956 (In Norwegian) [Stockholm].

In Hammerfest Hospital, treatment with corticotropin was applied in a number of cases of mammary fibrosis. The effect was surprisingly good and apparently of long duration. In the 4 cases reported the fibrosis disappeared after a few days of treatment. Palpation showed normal breast tissue. Tenderness had subsided. Pronounced nervous or circulatory symptoms associated with menstruation may disappear entirely after the treatment. No recurrence was seen on observation for up to 15 months.

## PEDIATRICS

**Goiter Induced by Iodide in Children.** H. H. Turner. South. M. J. 49:1443-1451 (Dec.) 1956 [Birmingham, Ala.].

Turner presents 6 asthmatic children in whom development of goiter was attributed to prolonged treatment with iodides. Significant depression of the thyroidal uptake of radioactive iodine ($I^{131}$) was associated with elevation of serum protein-bound iodine. Serum cholesterol levels were increased. Following the withdrawal of iodide in patients, and subsequent treatment with desiccated thyroid, there was a regression in size of the goiters and a return to normal values for both thyroidal uptake and urinary excretion of $I^{131}$. Serum protein-bound iodine levels also returned to normal. Withdrawal of both iodide and desiccated thyroid was not followed by recurrence of the goiters, and the thyroidal $I^{131}$ uptake and serum

protein-bound iodine level remained normal. The inhibitory effect of excess iodide on the thyroid in one patient was not reversed by prolonged deprivation of iodide or by administration of thyroid hormone. Only withdrawal of iodide without institution of thyroid therapy was followed by regression of the goiter and return of the thyroid to normal or nearly normal size in 3 of the patients. In view of clinical evidence and of experimental proof of the antithyroidal and goitrogenic effect of an excess of iodide, it would appear that the occurrence of goiter, hypothyroidism, or both in association with prolonged iodide therapy is not merely coincidental. The incidence of this "paradoxical" effect of iodide is low in asthmatics and other patients being treated with iodides. However, regardless of the mechanism, the inhibitory action does occur in a rather limited group of individuals who are unable for some reason to compensate and overcome the blocking effect of excess iodide ion.

**Carcinoma of the Thyroid in Children: A Report of 10 Cases.** G. H. Fetterman. A. M. A. J. Dis. Child. 92:581-587 (Dec.) 1956 [Chicago].

Carcinoma of the thyroid was observed in 10 children in western Pennsylvania. Only one of these cases was diagnosed between 1926 and 1950, all others being diagnosed during the last 6 years. This suggests that there has been an increase in the incidence of childhood thyroid carcinoma. Eight of these 10 patients had received irradiation to the face, neck, or chest area from 3 to 12 years before diagnosis of their thyroid carcinomas. All of the patients are alive as this report is submitted, having survived for periods ranging from 3 months to 8 years after diagnosis. Nodular thyroid enlargement should not be taken lightly, especially in children. Such nodules should be widely excised and submitted for microscopic examination. Practicing physicians should also be aware of the possible significance of persistently enlarged cervical lymph nodes in children. In many instances of thyroid carcinoma this clinical finding precedes thyroid enlargement. Follow-up studies of large series of children who have been irradiated in infancy are necessary in order to help arrive at a solution of the problem of the association of previous irradiation and thyroid carcinoma. Until definite information is available as to whether irradiation plays a role in the genesis of thyroid carcinoma, the use of ionizing radiations in the treatment of vague or non-neoplastic conditions in infancy should be reduced to a minimum.

**Pharyngoconjunctival Fever.** G. Sobel, B. Aronson, S. Aronson and D. Walker. A. M. A. J. Dis. Child. 92:596-612 (Dec.) 1956 [Chicago].

An outbreak of pharyngoconjunctival fever occurred in a summer camp for boys. It was characterized by spiking fever of from 3 to 7 days' duration usually terminating by lysis, unilateral or bilateral follicular conjunctivitis, follicular hypertrophy of the anterior pillar of the tonsils, enlargement of the nasopharyngeal lymphoid tissue, and cervical adenitis. Less common findings were generalized glandular enlargement, hepatomegaly, splenomegaly, and meningismus. Convalescence was occasionally prolonged. There were great variations present in the clinical findings. A heavy growth of APC (adenoidal-pharyngeal-conjunctival) type 3 virus was isolated from the conjunctivas, throat, and stools of 8 of 10 patients studied. A significant rise of complement-fixing antibodies was noted in the convalescent serums. The disease occurred in an explosive manner over a 3-week period in August, 1955. It involved 62% of the campers and 10% of the counselors. It was preceded by a smaller wave in July characterized by a mild pharyngitis. This involved 36% of the campers and 13% of the counselors. The relationship between the 2 waves is not known. The disease affected mostly younger children and appeared to be spread by droplet infection. Chemotherapy was ineffective.

**Pulmonary Arteriovenous Aneurysm in Childhood.** G. S. Husson. Pediatrics 18:871-879 (Dec.) 1956 [Springfield, Ill.].

Husson reports on a 2½-year-old boy who was referred to the Syracuse Memorial Hospital with the diagnosis of cyanotic congenital heart disease. The patient was cyanosed at rest, and the cyanosis increased when he cried. There was clubbing of the fingers. The heart was normal in size to percussion. No thrills were palpable. A grade 2 systolic murmur was audible in the left infraclavicular area. The pulmonic second sound was of normal intensity and was duplicated. A murmur with continuous quality was heard on auscultation posteriorly at the vertebral border of the right scapula. Fluoroscopy and roentgenograms revealed a pulsating mass extending from the right hilum almost to the periphery and limited to the inferior segments of the right upper lobe. In addition, there was evidence of a retroesophageal vessel at the level of the middle third of the esophagus. It was felt that this ectopic vessel was feeding the abnormal pulsating mass in the right upper lobe. A diagnosis of pulmonary arteriovenous aneurysm was made. Venous angiocardiography was performed, with sodium acetrizoate (Urokon Sodium) used as contrast medium in a dose of 0.75 cc. per kilogram of body weight. Many abnormal vessels were observed in the inferior segments of the right upper lobe, especially in the pectoral and axillary segments. The aorta was well visualized at 2 seconds indicating a marked right-to-left shunt at the pulmonary artery and pulmonary vein level. A right upper lobectomy was done. The pathological report on the resected lobe confirmed the preoperative diagnosis of pulmonary arteriovenous aneurysm. Cyanosis disappeared within 12 hours after the surgical intervention. The patient was discharged 12 days later. The patient's color remained pink even on strenuous exertion 3 months later.

Only 7 cases of pulmonary arteriovenous aneurysm diagnosed in childhood were collected from the literature, a small number compared to about 150 diagnosed in adult patients, yet about 50% of the latter patients had onset of symptoms before the age of 15 and 34% before the age of 10. The nature of the condition, especially the hypoplasia of the vessel walls with progressive enlargement, emphasizes the importance of early diagnosis and early surgery. The aneurysm may be extremely thin-walled with the risk of rupture great. The risk of surgical intervention is much less than that from morbidity and mortality caused by complications, the most frequent of which are rupture and brain abscess.

**A Comparative Investigation of the Effects of Corticotropin, Cortisone, Prednisone, and Prednisolone on Tuberculin Allergy.** R. Bulgarelli and C. Romano. Minerva pediat. 8:1257-1261 (Oct. 20) 1956 (In Italian) [Turin, Italy].

The authors studied the effects of corticotropin, cortisone, prednisone, and prednisolone on tuberculin reaction in 23 children from 2 to 11 years of age. The children received hormonal treatment for from 5 to 6 days. Intradermal reactions were studied before the hormonal treatment, 4 days after the beginning of the treatment, and 1 week and 24 hours after the end of the treatment. From 0.10 to 0.20 cc. of diagnostic tuberculin was given to each child. The hormonal treatment did not suppress the positivity of the intradermal reaction; sensitivity to tuberculin decreased in all patients; erythema decreased markedly. The effects of corticotropin, cortisone, and prednisolone were very much alike. The effect of cortisone was less constant and did not last as long as the effect of corticotropin, of cortisone, and especially of prednisolone. The authors think that the attenuating effect that the hormone has on the intradermal reaction is caused by the effect of the hormone on the mechanisms of action of the intradermal reaction; they do not exclude, however, that the hormone may also inhibit the production of antibodies.

## DERMATOLOGY

**Chlorpromazine Dermatitis in Nurses.** R. H. Seville. Brit. J. Dermat. 68:332-335 (Oct.) 1956 [London].

Ten part-time trained mental nurses, 1 full-time male mental nurse, and a pharmacist exhibited a dermatitis, which was caused by handling chlorpromazine hydrochloride (Largactil). The clinical picture was typical of a contact dermatitis. The onset in 5 of the 12 patients was on the face, with redness, swelling, and sometimes weeping of the skin, especially around the eyes, but also about the mouth. The other 7 patients presented with the rash in the clefts or on the sides of the fingers. After the acute reaction had subsided, there remained a dry scaling dermatitis that cleared up completely when the patient had sick-leave or a vacation, provided exposure to sunlight was avoided. On the patient's return to the same ward, the dermatitis recurred. Only 1 male nurse was affected. In the women's wards, the tablets were usually crushed between spoons and dissolved in boiling water, and from the histories of contact this would account for at least 7 cases. Crushing was not carried out by the male nurses, and this appears to be one of the factors responsible for the low incidence of dermatitis among them.

Apart from one of the nurses, who had eczema, the others recovered following instructions concerning a rigid "no-touch technique." Uncooperative patients were given the drug by injection, with the nurses wearing rubber gloves, masks, and gowns and avoiding droplet spray into the atmosphere by inserting the needle into a piece of sterile cotton wool when removing the air from the syringe. Crushing or dissolving tablets was forbidden, and the use of syrup or solution of chlorpromazine was discontinued. Contact with the minutest quantity of the drug will cause relapse. Photosensitivity is established as a contributory factor in causing the dermatitis.

**Localized Scleroderma: A Clinical Study of 235 Cases.** H. B. Christianson, C. S. Dorsey, P. A. O'Leary and R. R. Kierland. A. M. A. Arch. Dermat. 74:629-639 (Dec.) 1956 [Chicago].

The authors report on 235 patients between the ages of 1 and 76 years with localized scleroderma who were seen at the Mayo Clinic between 1923 and 1954. Linear lesions (linear scleroderma) or localized sclerodermatous plaques (morphea) were observed in 191 patients and bilateral disseminated symmetrical plaques (generalized morphea) in 44 patients. There were 179 females and 56 males, a ratio of 3 to 1. Trauma was mentioned as a precipitating factor by 15 patients, but its true relationship was controversial, as the injury often was trivial and distant from the primary sclerotic process. The frequency of joint pain and vague abdominal pain associated with scleroderma was notable. A considerable incidence of abnormalities of the central nervous system was noted in both the patients and their relatives, suggesting a relationship between localized scleroderma and a neuropathic heredity. Congenital anomalies were observed in 32 patients. Atrophy or contracture or both of one or more extremities were noted in 26 patients, primarily in those with linear scleroderma. Facial hemiatrophy was often associated with localized scleroderma involving the frontal, frontoparietal, or facial regions.

The type of scleroderma observed in these patients was usually benign, and no deaths were attributable to the cutaneous disease. The average duration of the disease was 3 to 5 years, but it remained active for 33 years in 1 patient. Practically all linear lesions were unilateral, and plaques of morphea were bilateral in 60 (70%) of the 83 patients with this form of sclero-

derma. The disease often appeared at puberty and at the menopause, and occurred earlier in life in those with linear lesions than it did in those who had a few plaques of morphea or generalized morphea.

**Dermatomyositis: Unusual Features, Complications, and Treatment.** H. B. Christianson, L. A. Brunsting and H. O. Perry. A. M. A. Arch. Dermat. 74:581-589 (Dec.) 1956 [Chicago].

The authors report on 179 female and 91 male patients between the ages of 2½ and 73 years with classic dermatomyositis who were seen at the Mayo Clinic between 1916 and 1950. The ratio of women to men was 2 to 1. A record of more than 1 case of the entity was found in only 1 family, in which 2 sisters, 1 aged 42 years and the other 51, had the disease. Dermatomyositis was associated with malignant disease in 18 patients (6.7%) between the ages of 40 and 72 years. Two patients, a 9-year-old girl and a 22-year-old woman, had spontaneous primary pituitary basophilism (Cushing's syndrome) 6 years after the onset of dermatomyositis. Two patients, a 10-year-old girl and a 49-year-old woman, had positive results from the clot test for lupus erythematosus. Pityriasis rubra pilaris–like eruptions were observed in 2 women aged 36 and 64 years respectively. Unusual gastrointestinal symptoms and signs consisted of difficulty in swallowing in a 43-year-old man; abdominal pain, nausea, and vomiting, in a 13-year-old girl; abdominal pain in a 74-year-old woman; and gastrointestinal hemorrhage in a 56-year-old man. A perforating gastric ulcer was revealed by autopsy in an 8-year-old boy severely incapacitated by dermatomyositis who died within a year after the onset of this disease. Abdominal distention, severe constipation, and atony of the intestine occurred in several patients. Three children between the ages of 6½ and 15 years had symptoms simulating polyneuritis, and 2 men had periods of depression followed by excitability and personality changes. Calcinosis was revealed by clinical and roentgenologic examination in 16 of 55 patients less than 16 years old. Twelve female patients over 16 years of age had calcinosis; the incidence of calcinosis among the 270 patients thus was 10.4%. Osteoporosis was observed in 2 male and 10 female patients less than 16 years old and in 18 adults.

Sixty-two patients representing all age groups and all phases of dermatomyositis were given cortisone in daily doses of about 100 mg. for adults and 25 or 50 mg. for children; the drug was administered in 4 equally divided doses. Twenty-six patients received the drug for a period of less than 3 months, and 36 were given the drug for from 3 months to 5 years. Twenty-eight patients were improved, and 9 obtained a permanent remission. Fifteen were unimproved, and 3 became worse. The drug was well tolerated by these patients. One patient, who had received cortisone for less than 3 months, died. Untoward side-effects of continuous cortisone therapy exceeding 6 months were hypertension in 3 patients, diabetes mellitus in 3, osteoporosis in 5, and increased weakness in 3. Improvement resulted from cortisone therapy in a sufficient number of patients with dermatomyositis to justify prolonged administration of steroids in conjunction with other supportive measures, particularly physical therapy.

**The Mother-Child Relationship in the Genesis of Neurodermatitis.** J. Marmor, M. Ashley, N. Tabachnick and others. A. M. A. Arch. Dermat. 74:599-605 (Dec.) 1956 [Chicago].

Twenty-two mothers of children with neurodermatitis were interviewed concerning the circumstances under which neurodermatitis first made its appearance in their children and concerning the mother's personal background and history, in an attempt to evaluate stresses in the mother-child relationship as factors in the genesis of the neurodermatitis. In addition, 10 of the mothers were given a battery of 3 projective psychological tests. There were 10 boys and 12 girls, ranging in age from 6 months to 11 years. There was a positive family history of eczema, neurodermatitis, asthma, vasomotor rhinitis, or allergic urticaria in 19 of the 22 children.

Neglect of the child in form of separation of the mother from the child or too rough or insufficient handling was present in all of the cases. Maternal rejection was either consciously or unconsciously manifested in 13 of the patients. The neglect of the child or separation from the mother appeared to be fortuitous in 9 cases as when the mother had to work or there was illness in either the mother or some other member of the family. The projective psychological studies revealed that the 10 mothers were all emotionally immature women, consciously or unconsciously hostile to their husbands and frustrated in their self-expressive needs. The theory is advanced that neurodermatitis is a disorder of adaptation, a reaction to stress, in which hereditary, psychological, and physiological factors are all operative.

## UROLOGY

**Therapeutic Results Obtained in Patients with Urogenital Tuberculosis at the Urologic High-Altitude Sanatorium in Leysin in the Period Between 1950 and 1953.** W. Kanzler. Urol. Internat. 3:80-89 (No. 2-3) 1956 (In German) [Basel, Switzerland].

One hundred thirty-two male and 39 female patients with urogenital tuberculosis were given systemic and specialized treatment at the high-altitude sanatorium in Leysin, Switzerland, between 1950 and 1953. One hundred twenty-five of the 171 patients had recent urogenital tuberculosis and 46 had recurrent disease. All of the 46 patients had undergone nephrectomy at least 1 year before treatment was started at Leysin; the 125 patients still had both their kidneys when treatment was started, but 66 had a nephrectomy performed at Leysin. All 171 patients were given chemotherapy. The drugs used were streptomycin, aminosalicylic acid (PAS), ethyl-ureide-benzal-thio-

semicarbazone (Tebazyl), isoniazid and hydrochaumoophtiol, a proprietary preparation of chaulmoogra. In the beginning the patients were given any one of these drugs alone for periods up to 1 year. Later combined treatment with at least 2 of these drugs was practiced as a rule for 3 months, and then treatment with another combination of drugs was given. Duration of treatment from 5 to 12 months was required to obtain satisfactory results. Streptomycin was given in doses of 1 gm. twice a week, aminosalicylic acid in doses of 8 to 12 gm. 5 times a week, isoniazid in doses of 5 mg. per kilogram of body weight daily, Tebazyl in doses of 100 mg. daily, and daily injections of 5 cc. of the chaulmoogra preparation were given. Early good results were obtained in 128 (74.8%) of the 171 patients. Twenty-seven (58.7%) of the 128 patients had recurrent disease and 101 (80.8%) had recent disease. Results were unsatisfactory in 43 patients, 19 of whom had recurrent disease and 24 recent disease. One hundred thirty-eight of the 171 patients had kidney lesions; 104 (75.4%) of the 138 had early good results and 34 had unsatisfactory results. Late results were evaluated in 96 patients 2 to 5 years after the start of the treatment. Sixty-nine of the 171 patients had been lost to follow-up and 6 patients had died of other causes than urogenital tuberculosis. Seventy-two of the 96 patients had recent disease and 24 had recurrent disease. Good late results were obtained in 19 (80.2%) of the 24 patients and in 58 (82.3%) of the 72 patients. Early conversions therefore appear to have remained stable. The following combinations of drugs proved to be effective in the order as listed: Tebazyl and isoniazid; streptomycin and isoniazid; Tebazyl and chaulmoogra; aminosalicylic acid and chaulmoogra; and aminosalicylic acid and isoniazid. Streptomycin, particularly in combination with isoniazid, should not be given before the danger of stricture or contracted bladder has subsided.

Thirty-two additional patients recently were given combined treatment with cyanoacetic acid hydrazide (Reazide) and Tebazyl. This combination proved to be at least as effective as that of isoniazid and Tebazyl, but it should not be given for more than 3 months continuously because of its then decreasing effect. Reazide was given in doses of 10 mg. per kilogram of body weight daily combined with 100 mg. of Tebazyl daily. The reported data suggest that once again one has come nearer to the aim of definite and rapid cure of urogenital tuberculosis by conservative treatment.

**Long-Term Chemotherapy in Renal Tuberculosis.** J. C. Ross. Urol. Internat. 3:90-95 (No. 2-3) 1956 (In English) [Basel, Switzerland].

Four hundred sixty-six patients with renal tuberculosis were treated with chemotherapy in a sanatorium at Wrightington, England. As a result of his experience the author recommends the following method of treatment. The patient should be given 2 gm. of streptomycin once a day and 250 mg. of isoniazid once a day in single doses for the first 2 weeks of his 6 months' sojourn in the sanatorium. One gram of viomycin sulfate and 1.5 or 2 gm. of a proprietary preparation with a similar structure to isoniazid (Nupersal or H. P. 213) should be given during the succeeding 2 weeks. These two pairs of drugs should then be given alternately for 2 weeks for the full 6 months of the patient's sojourn in the sanatorium. After the patient leaves the sanatorium he should be given by his family doctor 250 mg. of Nupersal 4 times a day and 3.5 gm. of calcium aminosalicylate 4 times a day, together with 2 gm. of streptomycin by injection at a single dose twice a week. No antibiotic should be given alone, and the course of treatment should probably last 2 years or more.

The alternating course appears preferable for the following reasons. Toxicity is diminished. Larger doses can be given, and because of this it is possible to achieve a greater concentration of streptomycin sufficient to allow the antibiotic to enter the macrophages. Conversion of the urine occurred during the 1st, 2nd, and 3rd year after the institution of the treatment. The course, therefore, must be a prolonged one, and chemotherapy should be alternating because of the high potency of the drugs used.

**Treatment of Tuberculosis of the Kidney.** E. Halkier and J. Meyer. Urol. Internat. 3:96-109 (No. 2-3) 1956 (In English) [Basel, Switzerland].

One hundred forty-five patients with urogenital tuberculosis were treated at the Finsen Institute in Copenhagen since the advent of chemotherapy in 1949. Only 13 of the 145 patients had a nephrectomy. One hundred thirty-two patients were treated by conservative chemotherapy, which in the beginning consisted of administration of streptomycin alone. Later, combined treatment was given with streptomycin and aminosalicylic acid, and, since the Fall of 1952, combined treatment was given with isoniazid, dihydrostreptomycin, and aminosalicylic acid. Adults were given 12 gm. of aminosalicylic acid and 300 mg. of isoniazid daily. In the first 2 months, 1 gm. of dihydrostreptomycin was given daily, followed by 1 gm. twice weekly for 4 months. The results of treatment in the 132 patients were compared with those in a control group of 90 patients, who received carbon-arc light therapy, sanatorium treatment, or no treatment at all.

Stable conversion, i. e., repeated negative results from guinea pig tests for more than 6 months after termination of a 6-month course of chemotherapy, was obtained in 76% of the patients, as compared to 20% of the controls. Age, sex, genital lesions, and duration of bacilluria were of no prognostic significance. The percentage of conversion in the control group was higher among the patients with cavitary tuberculosis. Increasing severity, however, seemed to decrease the incidence of conversion among the patients who received chemotherapy, and that not because of the lesions as such but because of a possible decrease of renal function, which was the single factor giving the poorest prognosis. Active extraurogenital foci likewise seemed to worsen the prognosis in the chemotherapy

group and in the control group. Forty-eight patients required more than 1 course of chemotherapy. The percentages of stable conversions obtained after the 1st, 2nd and 3rd course were 57, 33, and 19% respectively. The combination of isoniazid, dihydrostreptomycin, and aminosalicylic acid was superior to that of dihydrostreptomycin and aminosalicylic acid. Resistance developed in 21 patients who had been treated with either streptomycin or isoniazid alone, and only 7 (33%) of these patients were cured. The effect of chemotherapy on subjective symptoms, proteinuria, and pyuria did not significantly exceed that of nonspecific treatment. The control group was characterized radiologically by the aggravation of lesions and the occurrence of new cavities. Exclusions were the typical feature in the patients with conversions. Cavities persisting after conversion were the most striking picture in patients who received chemotherapy. A conversion was obtained by chemotherapy in 124 (76%) of the 145 patients, and in only 13 (9%) was chemotherapy supplemented by nephrectomy.

The results seem to justify the advice to always give conservative treatment a trial in patients with tuberculosis of the kidney instead of subjecting them primarily to surgical treatment.

## OPHTHALMOLOGY

**Bilateral Posterior Uveitis Complicating a Positive Tuberculin Cutaneous Reaction.** R. K. Miller and A. Smerz. A. M. A. Arch. Ophth. **56**:896-897 (Dec.) 1956 [Chicago].

A 29-year-old man was admitted to a Veterans Administration hospital in January, 1956. The chief complaint was pain in the right side of chest and hemoptysis. He had had "pneumonia of the bronchial type" in October, 1955. In December, a chest x-ray showed a patch of consolidation in the right upper lung. An intradermal tuberculin test was made in the left forearm in January, 1956. Test material was purified protein derivative of tuberculin U. S. P. (tuberculin P. P. D.). The following day he showed a positive reaction to the P. P. D., with pain, tenderness, redness, and swelling at site of injection, red streaks up the arm to the elbow, and tender swollen nodes in the left axilla. These reactions subsided, but 16 days after the test eye symptoms developed that were typical of acute bilateral inflammation of the posterior uvea. The patient complained of blurred vision, photophobia, pain in eyes, and lacrimation. Objective findings included bulbar injection (but definitely not circumcorneal), keratic precipitates, aqueous flare, and vitreous opacities. Visual acuity deteriorated. The patient was treated with hot boric acid compresses to the eyes and 1% atropine drops three times a day in each eye. Improvement was slow, but a month after the appearance of the eye symptoms vision had improved, aqueous flare had disappeared, and the keratic precipitates and vitreous opacities were much less marked. No exudates or hemorrhages were seen by ophthalmoscopy. The authors cite earlier reports on bilateral uveitis as a complication of tuberculin tests.

**Disappearance of Bi-temporal Hemianopsia Following Correction of Myxedema in a Case of Chromophobe Pituitary Tumor.** B. Skanse and Å. Arén. Acta endocrinol. **23**:289-294 (Nov.) 1956 (In English) [Copenhagen].

A woman, aged 63, had a chromophobe pituitary tumor, a decrease of visual acuity and bitemporal hemianopsia, and a severe pituitary myxedema. Following the correction of the myxedema with desiccated thyroid, visual acuity improved and bitemporal hemianopsia disappeared. A search of the literature failed to reveal a similar case. The reported case is important because it makes doubtful the need of surgical or irradiation treatment in myxedematous patients with chromophobe tumors of the pituitary gland. The findings also indicate that the effects of irradiation and/or surgery on visual disturbances of patients with pituitary tumors must be evaluated with caution if the patients are also being treated with a thyroid preparation.

## INDUSTRIAL MEDICINE

**Medical Problems in the Use of Atomic Energy in Industry.** R. E. Albert. New York J. Med. **56**:3315-3318 (Nov. 1) 1956 [New York].

This report is concerned with the medical aspects of radiation hazards, particularly ionizing radiation, most of which are emitted from radioisotopes. As a radioisotope decays, it emits one or more kinds of radiation: alpha, beta, or gamma rays or neutrons. These radiations vary with respect to penetrability. For example, alpha particles have a maximum range of a few cell diameters; beta particles can travel a few millimeters at most, but gamma rays, in the energy ranges usually encountered, are capable of passing through the entire body. The depth of penetration of neutrons varies with their initial velocity and ranges from a negligible extent to 5 cm. at 5 mev. An individual can become exposed to radiation from a source placed internally or externally. Radiation within the body results from inhalation, ingestion, or skin penetration of isotopes. The fate of the isotope within the body is determined by its physical and chemical form and the organ into which it is first deposited. Inhaled, relatively insoluble radioactive particulates will remain in the lung tissues. If the isotope is a chemical for which certain other tissues have a high degree of specificity, a gradual transfer of the isotope will take place. Thus, strontium and radium would be transferred in part to the bone. Isotopes can produce acute or chronic effects; for example, large quantities of radium, plutonium, or strontium may cause acute blood changes, and all may produce bone cancer as a late effect. The ocular lens is particularly susceptible to neutrons, which result in the development of cata-

racts. The number of cases of serious overexposure to highly penetrating radiations in the atomic energy industry has been small. Contamination of body surfaces with small amounts of radioisotope is not uncommon and can usually be treated simply by washing with soap (or detergent) and water; however, when the extent and magnitude of contamination is great, a special decontamination facility is necessary.

The most common medical problem with respect to internal deposition of isotopes is the exposure to airborne radioactivity of sufficient extent to cause a measurable urinary excretion. This situation does not call for medical therapy where the excretory levels are below permissible limits but rather serves as a guide for the industrial hygiene control. The internal deposition of radioisotopes in large amounts presents a difficult therapeutic problem. The objective is to increase the excretory rates as much as possible. With an isotope such as sodium, the approach is obvious, i. e., the use of mercurial diuretics with administration of large amounts of inert sodium. The therapeutic technique is also apparent with tritium—again, the administration of large amounts of water and use of diuretics. Antithyroid drugs that block iodine uptake would be indicated in the case of radioiodine. For some isotopes, there are specific nontoxic chelating agents that render the isotopes chemically inert and thus block deposition and increase the excretory rate.

**Calcification of the Pericardium Caused by a Hitherto Unrecognized Etiological Factor.** M. Kleinfeld and C. P. Giel. Am. Heart J. **52**:899-504 (Dec.) 1956 [St. Louis].

In a clinicoroentgenologic study of workers employed in talc mills and mines, calcification of the pericardium was observed in 3 of 37 workers. In one patient the pericardial calcification was known to have existed for at least 15 years and in another for a minimum of 5 years. In all 3 patients the pericardial calcification persisted without significant changes in cardiac size or evidence of disturbed hemodynamics. The relatively advanced age of these patients (79, 68, and 64 years) is in contrast to that found in chronic constrictive pericarditis with calcification, where the age range reported has varied from 10 to 59 years. Cardiac enlargement was absent, and the electrocardiographic patterns were also essentially normal.

The clinical picture revealed a chronic, slowly progressive course, with the predominant symptoms of pulmonary insufficiency consistent with the average course of talc pneumoconiosis. This picture contrasts with that of constrictive pericarditis, in which the symptoms are of cardiac origin. None of the patients showed any evidence of failure of the right or the left side of the heart. The precordial pain similarly did not appear to be of cardiac origin, although this cannot be entirely ruled out. The lack of response to nitroglycerine, the absence of any intensifying effect of effort, and the normal electrocardiograms after at least 5 years of chest pain would tend to exclude angina pectoris. The exact mechanism responsible for the calcification of the pericardium in exposure to talc is not known. It can best be explained by a mechanical effect of the talc fibers resulting in a chronic inflammatory response and increased capillary hemorrhage with subsequent calcium deposition.

## THERAPEUTICS

**Vaccination Against Smallpox: II. Jet Injection of Chorio-allantoic Membrane Vaccine.** B. L. Elisberg, J. M. McCown and J. E. Smadel. J. Immunol. **77**:340-351 (Nov.) 1956 [Baltimore].

This report is concerned primarily with cutaneous and serologic responses observed when smallpox vaccine, prepared from vaccinia virus grown on the chorioallantoic membrane of embryonated eggs was administered by jet injection to nonimmune persons and to others with varying degrees of immunity. Observations on persons inoculated percutaneously or subcutaneously with chorioallantoic membrane vaccine or percutaneously with calf lymph vaccine are presented for comparison. Inoculation of children and adults by means of the jet injection syringe with vaccinia virus grown on the chorioallantoic membrane of embryonated eggs elicited responses comparable to those that followed successful administration of calf lymph vaccine by multiple pressure method. Practically all nonimmune children displayed a primary vaccinial reaction at the site of jet injection of chorioallantoic membrane vaccine. Hemagglutination-inhibition antibodies developed in all and neutralizing antibodies in the majority of children receiving chorioallantoic membrane vaccine by jet injection. Following inoculation of partially immune adults with either chorioallantoic membrane or calf lymph vaccine, all persons possessed hemagglutination-inhibition antibodies, and the levels of these substances were comparable in the 2 groups. However, in many such adults, particularly those who already had appreciable levels of these antibodies, the hemagglutination-inhibition titers did not increase.

Only a few hundredths milliliters of the vaccine was introduced intradermally by the jet injection syringe; the rest of the 0.5 ml. was distributed subcutaneously. Nevertheless, the small portion that remained in the cutis seemed of paramount importance in eliciting the desired vaccinial response. The distribution of the vaccine throughout the epidermis and subcutaneous tissue of the recipient resulting from the jet method of injection eliminates many of the factors that have been responsible for the technical failures that occur with percutaneous inoculation. Immunologic failures are extremely rare when vaccination is performed by jet injection. The availability of potent, stable, lyophilized vaccine and of the jet injection instrument that permits the rapid, effective administration of such material appears to provide the necessary tools for prompt immunization of large populations against smallpox.

**Intralumbar Hydrocortisone Therapy of Lumbar and Cervical Radiculitis.** A. J. M. Lohman. Nederl. tijdschr. geneesk. **100**:2836-2840 (Oct. 6) 1956 (In Dutch) [Haarlem, Netherlands].

Lohman resorted to the intraspinal injection of hydrocortisone in 13 patients with lumbar radiculitis, in 4 with cervicobrachial radiculitis, in 2 with herpes zoster, and in 1 each with ankylopoietic rheumatoid arthritis of the spine (Bechterew's disease) and tuberculous meningitis. The dosage for the intrathecal injection was never more than 25 mg. of hydrocortisone. With a slight "spinal pumping," from 5 to 15 cc. of spinal fluid was removed depending on the spinal fluid pressure, and then the hydrocortisone was injected. A few patients who complained of severe radicular pain were given an epidural injection of from 0.5 to 1 cc. (10 to 20 mg.) of hydrocortisone. Favorable results were obtained in 6 of the 13 patients with lumbar radiculitis and in all 4 with cervical radiculitis. The patient with tuberculous meningitis also reacted favorably to the intrathecal hydrocortisone therapy. The patient with ankylopoietic rheumatoid arthritis estimated his improvement at from 50 to 80%, and the 2 patients with herpes zoster experienced prompt relief of pain and rapid disappearance of skin eruptions.

**Clinical Aspects and Pathogenesis of Intoxications with Penicillin, Penicillin Esters, and Tetracyclines.** H. Bohn and E. Koch. München. med. Wchnschr. **98**:1589-1597 (Nov. 23) 1956 (In German) [Munich, Germany].

Bohn and Koch believe that the fact is not sufficiently appreciated that serious intoxications can be produced by penicillin and tetracycline preparations. Although there have been numerous reports on such intoxications, it is difficult to estimate their frequency, because the symptoms caused by these drug intoxications are easily mistaken for aggravations of the existing disease. Experimental studies carried out by these authors demonstrated that the brain is the organ most sensitive to penicillin in animals as well as in man. The characteristic symptoms of penicillin intoxication, such as convulsions, pulmonary edema, pulmonary hemorrhage, and protracted enterocolitis, are all elicited by way of the brain. Intramuscular administration of penicillin as a rule causes no symptoms of intoxication, even when the doses injected are fairly large, because the blood-brain barrier protects the brain, and the minute quantities of penicillin that enter the brain can be neutralized by the penicillinase in the brain substance. This is not true, however, of the esters of penicillin, which are available in Germany under the proprietary term of "Pulmo 500." This substance passes unhindered through the blood-brain barrier, even when it is injected intramuscularly, so that the toxicity threshold of the brain is readily exceeded. The authors advise against the use of the ester form of penicillin. Danger of intoxication with penicillin exists also when penicillin is administered by the intrathecal route or when it is applied directly into the brain during operations for brain abscess. Intravenous and intra-arterial administration of penicillin readily results in intoxication because the blood-brain barrier can be broken and the effect of penicillin is more potent.

The liver is the organ most subject to intoxication with the therapeutic use of the tetracyclines, particularly in patients with hepatic disorders. The characteristic symptoms are hemorrhagic diathesis in the form of bleeding into the mucous membranes of the lung and of the gastrointestinal tract. These pulmonary hemorrhages and enterocolitis are caused by a deficiency of the formation of a prothrombin factor in the liver.

**Application and Conditions of Resorption of the Methonium Salts in Hypertension.** G. Bilecki and J. Carlin. Ztschr. ges. inn. Med. **11**:972-980 (Nov. 1) 1956 (In German) [Leipzig, Germany].

The use of ganglion blocking substances, in addition to sympathicolytic drugs such as Rauwolfia alkaloids, is indispensable for a successful medical treatment of persistent or malignant hypertension. Hexamethonium salts are still the most effective of ganglion blocking agents, although they may produce a series of side-effects, inhibiting the simultaneous transmission of parasympathetic nervous impulse in the ganglion. Methonium compounds are given by mouth or parenterally. Patients with renal insufficiency require constant clinical control to avoid acute intoxications, since methonium compounds are eliminated exclusively by the kidneys.

## PATHOLOGY

**Change in Pathology of Pulmonary Tuberculosis Under the Influence of the Newer Antibiotics.** O. Auerbach. New York J. Med. **56**:3844-3848 (Dec. 15) 1956 [New York].

The pathological findings in patients with pulmonary tuberculosis who had received long-term chemotherapy and in patients in whom the treatment was begun soon after the onset of the disease were compared with those in patients in whom the disease had run a successful course without the benefit of the drugs. Pulmonary tuberculosis is greatly altered under the influence of the newer antibiotics. The changes are permanent and different from those observed in untreated patients. The extent of the alterations is dependent on proximity of the treatment to the onset of the disease and on the duration of therapy.

The most striking and beneficial effect of the prolonged use of antibiotics consisted of rapid and extensive clearing of the perifocal reaction. The following changes in the tuberculous lesions were observed after chemotherapy: the width of the fibrous capsules around encapsulated necrotic foci was greatly decreased; the thickness of the walls of the tuberculous

cavities and of the pleura overlying these was decreased as compared to those of similar anatomic age; there was decrease in pulmonary fibrosis and pulmonary emphysema, resulting in less destruction of pulmonary tissue; and there was a greatly decreased incidence in the development of pulmonary arterial aneurysms and consequent decrease in massive pulmonary hemorrhages.

The following differences in the mode of cavity healing were observed. Reepithelization of the ulcerated bronchus at the bronchocavitary junction induced cavity closure as a result of the disruption of the check-valve mechanism of the bronchus as it enters the cavity, and evacuation of the necrotic contents and open healing of the cavity when the reepithelization resulted in a wide outlet. The latter is now being observed with increased frequency.

**On the Incidence of Sternal Metastasis in Patients with Carcinoma of the Breast.** L. Mussa and A. Tardy. Minerva med. **47**:1144-1149 (Oct. 13) 1956 (In Italian) [Turin, Italy].

The authors examined 120 patients with carcinoma of the breast in different stages of evolution. Roentgenologic examination of the thorax and other parts of the skeleton most frequently affected by metastasis was done, and metastasis was found in 88 patients. Fourteen of the 88 patients had sternal metastasis and were divided into 3 groups. The 1st group was composed of 8 patients in whom sternal metastasis was found before or at the same time that metastasis was found in other parts of the skeleton; lymph node metastasis was present in 5 patients. The 2nd group was composed of 5 patients in whom the first finding of bone metastasis was in the sternum but metastasis had been found before in the lymphatic system. Sternal metastasis of 4 patients was soon followed by other metastases produced by emboli carried by the blood. Other metastases in 1 patient did not develop after 1 year. The 3rd group was composed of 1 patient in whom sternal metastasis was the first finding of secondary neoplasia; the metastasis was still localized after 1 year. Thus sternal metastasis represented the first finding of bone metastasis in 6 patients (5%). None of the findings were opposed to the hypothesis that sternal metastasis in patients with carcinoma of the breast originates from the diffusion of emboli through the vena cava and the lungs. Most careful roentgenologic examination of the sternum should be made in patients with carcinoma of the breast, because sternal metastasis is seldom manifested by pain.

**An Increasing Incidence of Myeloma.** G. T. O'Conor and A. Caldarella. Connecticut M. J. **20**: 864-867 (Nov.) 1956 [New Haven].

The authors call attention to the increase in incidence of multiple myeloma in a general hospital following the introduction of paper electrophoresis as a laboratory test. Sixteen cases of plasma cell myeloma with diagnostic serum electrophoretic patterns were studied in the past year. Twelve of these represent new cases from 1 hospital, indicating that this disease is probably much more frequent than previously reported and often goes unrecognized. Clinically, the patients may present themselves with varied symptomatology, with no complaints, or with totally unrelated problems. Roentgenography may likewise run the gamut from no bony changes, through demineralization and generalized osteoporosis, to well-developed and readily recognizable destructive lesions. The usual laboratory tests are most erratic and unpredictable. Alterations in the albumin-globulin (A/G) ratio as ordinarily done frequently are not seen even late in the disease, and changes in calcium, phosphorous, and alkaline phosphatase levels are entirely nonspecific. Examination of the bone marrow, although usually diagnostic late in the disease, may be negative, and probably in the very early stages is seldom positive, since success depends on biopsy of a lesion that may be discrete and have a spotty distribution. If hope of cure depends on early diagnosis, then the specific electrophoretic pattern demonstrated in myeloma would appear perhaps to be an answer, since it is to date the closest approach to a so-called "blood test for cancer," and it is the only laboratory test which has given a consistently abnormal result in all stages of myeloma.

**The Fundus Oculi and the Determination of Death.** J. Kevorkian. Am. J. Path. **32**:1253-1269 (Nov.-Dec.) 1956 [Ann Arbor, Mich.].

Kevorkian states that the rapid and striking changes in the retina and its vessels, resulting from the cessation of blood flow to the bulbus oculi, constitute the earliest and most accurate sign of death. He summarizes previous observations on this sign and emphasizes the importance, speed, accuracy, and ease of observation of the fundus oculi. He illustrates photographically the appearance of the retina during and after death and correlates the fundic changes with simultaneous electrocardiographic tracings. The described ophthalmoscopic signs provide a readily available means of determining the fact of death, of differentiating apparent and actual death, of estimating (within a certain range) the elapsed time after death, and of indicating the possibility of success from efforts at resuscitation.

## RADIOLOGY

**Osseous Coccidioidomycosis: A Chronic Form of Dissemination.** J. W. Birsner and S. Smart. Am. J. Roentgenol. **76**:1052-1060 (Dec.) 1956 [Springfield, Ill.].

The authors report observations on 18 patients with chronic osseous coccidioidomycosis, who were followed for from 4 to 29 years. This series is unique, since it represents the first long-term follow-up in

osseous coccidioidomycosis. The patients were traced through the facilities of the Kern County Public Health Department, Bakersfield, Calif., and the Kern general hospital medical records librarian. The age range at time of onset was from 2 weeks to 56 years, and all but one patient have returned to full activity. Apparently the most favorable prognosis can be expected when only 1 or 2 bones are involved. In this series 6 patients had involvement of 1 bone, 9 patients of 2 bones, and the other 3 more than 2 bones. Roentgenograms demonstrated an osteolysis with or without cortical thickening and sclerosis. The involvement was frequently in the medullary portion of the bone and is believed to be hematogenous to bone rather than by direct extension from soft tissue. Although soft tissue involvement may occur without apparent bone spread, no case of subsequent bone invasion from a soft tissue focus was found. There is no known medical treatment for osseous coccidioidomycosis; frequently, good results have been obtained when surgical excision or amputation could be performed.

**Osteoid Osteoma.** R. A. Flaherty, D. G. Pugh and M. B. Dockerty. Am. J. Roentgenol. **76**:1041-1051 (Dec.) 1956 [Springfield, Ill.].

Flaherty and associates reviewed the roentgenograms and records of all patients seen at the Mayo Clinic for whom either a clinical or a roentgenographic diagnosis of osteoid osteoma had been made. The study was based on the 52 cases in which pathological proof was obtained of this benign neoplasm of bone, which is characterized in the roentgenogram by a small tumor nidus that is usually accompanied by a variable amount of contiguous bony sclerosis or the formation of periosteal new bone. The age range of the 52 patients was about the same as that observed by other investigators, the lesion being found most commonly in older children, adolescents, and young adults. Forty-one of the patients were males and 11 were females. The bones most frequently involved were the femur and the tibia. Next in order of frequency were other long bones, the ilium, and the scapula. The initial symptom was usually pain, vague at first but gradually increasing in severity. This pain was described as boring or aching in character and was often worse at night. Although many of the tumors produced symptoms that were localized to the immediate site of involvement, they not infrequently produced a more bizarre clinical picture. When the tumor arose in the proximal part of the femur and in the ilium, the incidence of referred pain or pain simulating that of a protruded intervertebral disk was high. Osteoid osteoma, early in its development, probably appears on the roentgenogram as a small area of radiopacity that later becomes partially or completely radiolucent. The presence or absence of calcification within the tumor does not appear to be significant, except as an aid in differential diagnosis.

It may be quite difficult to distinguish an osteoid osteoma on roentgenographic appearance alone from a number of other bone diseases such as sclerosing osteomyelitis of Garré; a small pyogenic abscess in cortical bone; a localized area of tuberculous or brucellar osteomyelitis; Ewing's tumor; osteogenic sarcoma; the osseous lesions of reticuloendotheliosis, or march fracture. The type and amount of reactive bone formation accompanying the tumor and hence the appearance of the osteoid osteoma were variable. They were dependent on the bone involved and the position of the tumor within the bone. The natural history of an osteoid osteoma is a mystery. The cause is unknown, and its propensity to induce sclerosis of adjacent bone is not understood. It has been suggested that the symptoms disappear after growth of the tumor stops, but in the 3 cases observed, in which the appearance of the tumor was unchanged on the roentgenogram for periods of 6, 17, and 24 months, respectively, symptoms either remain unchanged or increased in severity. With a tumor that is so amenable to surgical excision and so difficult at times to distinguish from other lesions, it is reasonable not to wait and observe what will ultimately happen to it.

**The Roentgenologic Menifestations of Pancreatic Tumors.** F. B. McGlone, D. S. Robertson and J. M. Grogan. Gastroenterology **31**:551-565 (Nov.) 1956 [Baltimore].

The authors have reviewed the histories of 115 patients suspected of having carcinoma of the pancreas in whom the diagnosis was confirmed by endoscopic and surgical procedures. Ninety-three patients were submitted to roentgen study, and 56 of these had positive roentgen findings. Seventy-six patients were reviewed in retrospect. Fifteen of these, in whom the diagnosis had previously been negative, showed additional findings that were positive in retrospect. The location of the tumor was predominantly in the head of the pancreas. In 60 patients, the body and the tail were involved. The changes in the contour and position of the duodenum and the stomach due to pancreatic tumor were numerous, although not characteristic. Intravenous cholangiography was not successful. Splenoportography is still of academic interest because of the hazards involved in this test. The roentgen manifestations were quite significant in arriving at an accurate diagnosis of carcinoma of the pancreas. Positive roentgen abnormalties often offer the first definitive evidence of the presence of a tumor. Careful attention to defects produced in the upper digestive tract may lead to the diagnosis of tumor of the pancreas. Exploratory laparotomies could be avoided by attention to the radiologic findings. But negative findings cannot exclude the presence of a carcinoma of the pancreas. Teamwork between clinician, radiologist, and surgeon is necessary to find the lesions.

# BOOK REVIEWS

**The Happy Life of a Doctor.** By Roger I. Lee, M.D. Cloth. $4. Pp. 278, with illustrations. Little, Brown & Company, 84 Beacon St., Boston 6, 1956.

In the conclusion of his autobiography, the author writes, "And now the simple saga of my life has been told." That modest understatement follows many entertaining accounts of important activities and events, of important people whom he met, and of many important positions that he held in a long and happy career in medicine. He writes first about his ancestors, the more recent ones being New Englanders, and about his boyhood when he "hung around the store a little and the town doctors were often there." This probably explains, partially at least, why he always had the idea of becoming a physician. He entered Harvard College without knowing a single soul there. He was not athletic, not a debater, not a "fusser," but he spent a lot of time at Harvard just talking, and that kind of college training may account for the conversational appeal of this story of his life. The reader feels that he is sitting down with the author and pleasantly talking the time away. He takes you into his office, to France in World War I, later on trips to other foreign countries, then back to Harvard, where he was professor of hygiene in the school of public health, to Massachusetts General Hospital and its research laboratories, to the Harvard Corporation where he was a member of the Board of Overseers, and back to his office, where he still enjoys the practice of medicine.

The author talks about various phases of medical practice, for example, physicians' fees. He believed in a fixed fee for service, which could often be reduced, and not in a fee based on the patient's income. He talks of the "prodigious advances in medicine" in his time, throughout which period he has believed in the treatment of the patient, not in the treatment of electrocardiographic, x-ray, immunological, and chemical findings. He is opposed to the patenting by physicians of substances or processes used in therapeutic medicine or public health, and he has labored for postgraduate medical education. Among his contacts with famous people, he laments having missed meeting Lord Moran, physician to Sir Winston Churchill and president of the Royal College of Physicians in London, who in 1950 brought the gold-headed cane to the United States to a meeting of the American College of Physicians. Lord and Lady Moran arrived, the author says, "at our humble domicile," but, owing to the complication of schedules, "Mrs. Lee and not I met" them. While the original gold-headed cane goes back to 1689, when it was first carried by Radcliffe, the tradition has been kept alive in the United States by Dr. William J. Kerr of the University of California who, Dr. Lee relates, presented the cane to him. Among other positions to which Dr. Lee has been elected are the presidency of the American College of Physicians and the presidency of the American Medical Association, after serving the Association for many years in the House of Delegates and on the Board of Trustees. Delightfully informal, he seems to reminisce with a twinkle in his eye. A few pictures, including a characteristic one of Sir Alexander Fleming, of Lord Moran, of the presidents of Harvard University, and of the Lees with their three boys, enhance the pages and leave one wanting to see more of them.

**Clinical Examinations in Neurology.** By members of Sections of Neurology and Section of Physiology, Mayo Clinic and Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, Rochester. Cloth. $7.50. Pp. 370, with 76 illustrations and [in back pocket] 5 charts. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, England, 1956.

In this volume 16 contributors present an "outline of the practical components of the neurological examination." The various portions of the book are contributed by the several authors, each dealing with his special field of interest, but without specific accreditation of each portion to its author. This manual sets forth in detail the techniques of the clinical neurological examination, including the securing of the history, and includes special chapters on electroencephalography, electromyography, biochemical and pharmacological aids in diagnosis, and the performance of lumbar and cisternal puncture. Practical anatomic relationships, dermatomic and neuronal sensory areas, and electroencephalographic and electromyographic tracings are clearly depicted in numerous illustrations, the well-known Mayo Clinic system of quantitative recording of findings is clearly expounded, and the forms and charts in current use are included in a pocket supplement in the back of the book. A consideration of neuroroentgenology is omitted. In a most felicitous introduction, the work is gracefully dedicated to the two great neurologists and teachers, Henry W. Woltman and Frederick P. Moersch.

This excellent guide is at once exhaustive and compact. It is in nearly every respect a worthy product of one of the outstanding neurological centers in the world. Procedures are clearly described and the significance of abnormal signs briefly indicated in a style notable for simplicity and uniform quality despite the plurality of authorship. Positions taken on disputed points avoid radical departure from orthodox and widely accepted views. Especially noteworthy are the admirably restrained and strictly factual chapters on electroencephalography and electromyography that offer the clinician exactly what he needs to know and, without the extravagance observed in some quarters, set these valuable techniques in their proper places in the whole spectrum of clinical and laboratory tests. This book has been written by men who have studied patients as well as books and machines. The distillation of their practical methods and discriminating insights should be welcomed by every neurologist, young and old.

It may seem captious, in view of these splendid qualities, to indicate a few faults. As examples, the discussion of sensory functions is less than sophisticated,

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These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

especially the division into "cortical" and "thalamic" sensation, with foggy definitions and distinctions. A synthesis of the signs of cerebellar dysfunction into something approaching a unified whole would have been valuable. The discussion of aphasia, while practical and unexceptionable as far as it goes, suggests an undue reliance on the treacherous "mosaic" concept, while the statement that "ideokinetic apraxia generally subsides spontaneously with the passage of time" leaves the reader reflecting that the nature of the lesion must be determinative. Finally, there are in the body of the book only six minor bibliographical references, despite the need of the serious student for key citations to important works for further reading. Despite these and a few other minor defects, this admirable book should prove a boon for the student of neurology, resident, and clinician. The index is complete and well organized, and the whole volume a model of the publisher's skill.

**Medical Aspects of Traffic Accidents: Proceedings of the Montreal Conference.** Harold Elliott, M.D., editor. This first conference was held at McGill University, May 4 and 5, 1955, under auspices of: McGill University, Université de Montréal, Canadian Medical Association (Quebec Division), l'Association des médecins de langue française du Canada, Montreal Medico-Chirurgical Society, Société médicale de Montréal, Royal Automobile Club of Canada. This volume was published through kindness of Sun Life Assurance Company of Canada. Cloth. $7 (plus 25c postage). Pp. 519, with illustrations. Traffic Accident Foundation for Medical Research, Room 218, Sun Life Building, Montreal, Canada, 1955.

The conference that is the subject of this report was largely conceived and administered by the editor. The 97 contributors, from Canada, England, and the United States, represented the fields of medicine, surgery, insurance, law, education, public health and welfare, and automotive safety as well as the police, hospitals, rehabilitation centers, and the Army, and the Navy. The subject matter is discussed under the following chapter headings: General Statistical Data, Preschool and School Children in Accidents, Traffic in Industry, Auto Crash Research, Alcohol and Traffic Accidents, Neurological Disorders, Behavior Effects, also Ocular Causes, Emergency Care, First Aid and Ambulance, Screening Clinics, Town Planning, and Car Design. The volume is well indexed, and there is a complete bibliography. It is a limited edition. This comprehensive treatise is an excellent reference for students of traffic accidents.

**The Official American Medical Association Book of Health.** Edited by Dr. W. W. Bauer, chief editor, *Today's Health*. [Articles from *Today's Health* were prepared for publication by Mr. Ellwood Douglass, managing editor.] Paper. 35 cents. Pp. 320, with illustrations. Dell Publishing Company, Inc., 261 Fifth Ave., New York 16, 1957.

This compilation of articles that have appeared in *Today's Health* in recent years is popularly priced in order to encourage wide dissemination. The articles are grouped in sections dealing with nutrition, rest, common health problems, the heart, cancer, tuberculosis, mental health, and family problems. These articles are well selected and should acquaint the lay reader, for whom the volume is intended, with modern thought on many important phases of health. The text is interspersed with cartoons and epigrams also culled from the pages of *Today's Health*. The book should find wide and enthusiastic acceptance among the general reading public. There is no index, but in a work of this kind an index is hardly necessary.

**Pre and Postoperative Care in the Pediatric Surgical Patient.** Edited by William B. Kiesewetter, M.D., Associate Professor of Surgery, University of Pittsburgh, School of Medicine, Pittsburgh. Cloth. $7. Pp. 347, with 49 illustrations. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1956.

This fine textbook does not treat pediatric surgical patients as "little adults," but rather as a specific group with specific problems. An admirable feature of the work is that it is written not only for the specialist but for the "occasional pediatric surgeon" as well. Although much of the material is beamed to this "occasional pediatric surgeon," it nevertheless has been acquired from the material gathered in a children's hospital where many patients of each type were accessible rather than only an occasional one. Chapter 1, which deals with the child's emotions and surgery, presents a down to earth discussion of the emotional problems involved. It fortunately does not go overboard on controversial psychiatric problems. Chapter 2, entitled Fluid and Electrolyte Balance, is one of the best in the book, despite its brevity. Practical therapeutic measures for specific problems are accurately and succinctly described. Section three, dealing with specific preoperative and postoperative considerations, is admirably divided into chapters on abdominal, thoracic, orthopedic, neurosurgical, plastic, urologic, otorhinolaryngologic, and ophthalmic surgery. A worthwhile feature is the addition of appendixes, which include forms for preoperative and postoperative care and notes on dehydration and acidosis, drug dosages, electrolyte solutions, blood chemistries, spinal fluid constituency, hematology, and liver-function studies. This book will not appeal to those who do not enjoy an outline presentation, but for those who do it can be recommended enthusiastically.

**Diabetes Guide Book for the Physician.** Second edition. Paper. $1. Pp. 95. American Diabetes Association, Inc., 1 E. 45th St., New York 17, 1956.

This little book is a revision and expansion of the first edition published in 1950. The work of a special committee of the American Diabetes Association and approved by its Council "in principle," it represents, as nearly as any book can, the consensus of a group of experts and, in this respect at least, is unique in the field. It is designed "simply to present information to guide immediate action in dealing with the common problems of diabetes." The style is simple and clear if somewhat abbreviated, the layout effective, and the typography pleasing, especially important sections being presented in boldface type. The major subdivisions bear the titles, The Clinical Problem, Dietary Regulation, Insulin, Complications, and Diabetes in Children. With respect to the desirability of strict versus lax control of glycosuria, the book takes a position distinctly to the right of center, although not extremely so. The chapter on diet, prepared in cooperation with a committee of the American Dietetic Association and the Diabetes Field Research and Training Unit of the

United States Public Health Service, gives a lucid exposition of the exchange system of diet calculation and provides sample meal plans covering a wide range of caloric allowances. Procedures for planning low-sodium and low-residue diets are included. Preoperative and postoperative management and the treatment of acidosis are covered especially well in a succinct and orderly fashion. The convenient size and low cost of the book should add to its other attractions to the busy practitioner.

**Clinical Chemistry: Principles and Procedures.** By Joseph S. Annino, Clinical Chemist, Massachusetts Memorial Hospitals, Boston. Cloth. $7.50. Pp. 280, with 15 illustrations. Little, Brown & Company, 34 Beacon St., Boston 6; J. & A. Churchill, Ltd., 104 Gloucester Pl., Portman Sq., London, W.1, England, 1956.

This volume is intended for the technician whose interest is in the whys and wherefores of the techniques used in clinical chemistry in addition to the mechanics of the methods. The book is divided into two parts, the first dealing with basic techniques and the second with practical methods. The first part consists of four chapters that cover rather briefly such general subjects as laboratory apparatus and standard solutions, colorimetry, factors in quantitative analysis, and the collection, preservation, and identification of samples. The second part includes a discussion of the various methods available for the quantitative determination of a number of substances of interest in clinical chemistry, the details of the procedure of the method of choice for each substance, standardization procedures, where necessary, and a brief note on the clinical significance of the results. Methods are included for the determination of carbon dioxide, chloride, sodium, potassium, electrolytes and pH, glucose, nitrogen, protein, calcium, phosphorus, a number of enzymes, creatinine, creatine, and uric acid. Individual chapters on the analysis of cerebrospinal fluid and the determination of the level of a few of the common drugs in the blood are also included. The book contains chapters on tests of liver and kidney function. It has a subject index.

**Refresher Course for General Practitioners: Specially Commissioned Articles from the British Medical Journal.** Third collection, April 1952 to September 1953 (fully revised). Cloth. 25s. Pp. 548, with illustrations. British Medical Association, 19 Tavistock Sq., London, W.C.1, England, 1956.

This is a collection of 60 original articles that first appeared in the *British Medical Journal* and that have been revised and brought up to date. The prime objective of the book is to review established medical principles in the light of new developments. It performs this service admirably. Some of the topics include: surgical relief of pain, medical aspects of air travel, recurrent boils, and indigestion in childhood. A few articles consider a physician's relation to the law (e.g., psychiatric treatment, abortion, and the interpretation of wounds), and, while primarily adapted to British law, the explanations concerning the spirit of the law and how it may function will be a valuable reference to the physician in any country. The articles are unusually complete, considering their brevity, and are competently illustrated where appropriate. The author of each article is considered an authority in his field. While there is no bibliography, there is an ample and helpful index. The style of writing is uniformly clear, and the unexpected and amusing wit scattered throughout the pages markedly adds to the textbook, which should be enjoyed by all physicians and students.

**Body Measurements and Human Nutrition.** Edited by Josef Brožek. Proceedings of Conference on Role of Body Measurements in Evaluation of Human Nutrition, sponsored by Committee on Nutritional Anthropometry, Food and Nutrition Board, National Research Council, and held at Harvard University, Cambridge, Massachusetts, June 17 and 18, 1955. Proceedings were originally published in May, 1956 issue of *Human Biology* (vol. 28, no. 2). Cloth. $3.50. Pp. 167, with illustrations. Wayne University Press, Detroit 1, Mich., 1956.

In this book different aspects of nutritional anthropometry are examined in 12 different papers by various authorities in related fields. The need for this book arises from the fact that the evaluation of the nutritional status of man with regard to emaciation, obesity, growth, and skeletal and muscular development is a major area of human nutrition that has been neglected. There are at present no well-defined uniform methods or properly characterized standards for these purposes. For the development of knowledge in this area it is necessary to use facts and expert knowledge from several fields that do not ordinarily have contact with each other. Among these would be the fields of nutrition, physical anthropology, pediatrics, physiology, actuarial science, anatomy, physiological hygiene, and general statistics. The appearance of the study of nutritional anthropometry is a most welcome development for physical anthropologists. The provision of valid information on this subject, including the significance of the growth rates of children evaluated in terms of subsequent health and longevity, is an outstanding challenge to students of human biology.

**Gathercoal and Wirth Pharmacognosy.** By Edward P. Claus, Ph.D., Professor of Pharmacognosy and Head of Department, University of Pittsburgh School of Pharmacy, Pittsburgh. Third edition. Cloth. $12.50. Pp. 731, with 307 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1956.

The two previous editions of this book were published in 1936 and 1947. The original taxonomic method of classification of the drugs in the textbook has been changed to the chemical method, while the original monograph form of drug presentation has been retained. Some of the macroscopic and microscopic descriptions of lesser drugs have been reduced when the authors believed that such information, if desired, would be available in earlier editions of the textbook, in the United States Pharmacopeia, or in the National Formulary. Much new information has been incorporated in the areas of the book dealing with antibiotics, immunizing agents, allergens and allergenic preparations, and pesticides. Included in some monographs are trade names of commercial products. Appendixes include a taxonomic list of important drugs and powdered drugs, a key for identification of powders, and one on the cultivation of drug plants. The index is adequate. However, the inconsistent illustration of chemical structures is somewhat annoying.

# QUERIES AND MINOR NOTES

## PSYCHIATRIC SYNDROMES IN VETERANS

To the Editor:—*Is the clinical impression correct that mild persistent mental abnormalities are more frequent in veterans who served for long periods in the Pacific Theater during World War II than in soldiers who served at other times or in other places? The syndrome in such veterans is a mild but permanent sense of depression, a sense of futility, anxiety, and overpreoccupation with the reason for things—*Weltschmerz *is the best term. In this connection it is interesting that such phrases as "rock-happy" and "thousand-yard stare" were part of the common vocabulary in that theater at that time. Are there any scientific data to the effect of such duty on the personalities of men who served in the Pacific Theater for long periods during World War II? What is the incidence of psychoneuroses, for example, in these veterans compared to men who served in other times or places?* *H. L. Metzer, M.D., Clinton, Ill.*

Answer.—When one recalls the wide variation of deeply reinforced patterns of response to stress that soldiers bring into combat, and as one sees the tremendous variety of syndromes in soldiers evacuated to Army hospitals in time of combat, the importance of geographical location seems to become minimized. On the other hand, the combat stresses, command discipline and morale, disease rates, evacuation policies, limitations of communication, and other factors vary from theater to theater and from year to year. However, observations of a clinical emotional syndrome more common in veterans who served specifically in the Pacific Theater in World War II have not come to the attention of this consultant at any time before. It is rather unusual to find any consistent, long-term psychiatric syndrome that can be shown to be attributable to any set of circumstances arising in a particular geographical area. Such syndromes, however, have been seen, as for example, the large groups of symptoms found in many of those people who were prisoners of war of the Japanese for several years during World War II. The consensus seems to be, however, that the geographical aspects of their imprisonment contributed primarily by reason of the privations permitted by local culture, the total inadequacy of available food, and the drastically harsh and overwhelming stresses that the group experienced in common. Thus, again, the geographical location might be postulated as accidental so far as the eventual psychiatric complaints are concerned.

So far as such phrases as "rock-happy" and "thousand-yard stare" are concerned, it seems to be a fairly universal phenomenon that groups under stress pick out characteristic aspects of their surroundings, job, or dangers and weave them into a phrase that symbolizes a capitulation to the general stress; thus we may find "honeybucket fever," "hill-happy," "screaming mimies," and good old-fashioned "shell shock." Such pet phrases may be confined to a small unit or enjoy fairly extensive usage. Although this consultant is not able to confirm the inquirer's impression, opinions are offered as to why such a syndrome would not necessarily be expected. The observation is stimulating and should offer incentive to confirm the ideas proposed.

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The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

## HERPES SIMPLEX OF THE VULVA

To the Editor:—*A 20-year-old nonpregnant woman has an unequivocal case of herpes simplex of the vulva. The lesions occur just prior to the menstrual period and are characterized by burning and itching about the affected part and typical vesicular lesions on an erythematous background. The patient has received a course of four smallpox vaccinations at weekly intervals and has responded only temporarily to Aureomycin powders and ointment. Prior to her last menstrual period the lesions of the vulva were accompanied by lesions of the lower lips. Please give suggestions for therapy.* *M.D., Mississippi.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—The treatment of herpes simplex may be divided into two phases: treatment of the specific lesion and prophylaxis. The individual patch of vesicles clears rapidly with or without treatment, but application of a 2% ammoniated mercury ointment constitutes an adequate local measure. Unfiltered x-ray therapy may be of benefit. In some instances, the local application of a paste made by crushing a tablet of 50 mg. of Pyribenzamine and adding a little water will act to abort the attack. However, the prophylactic therapy employed to prevent recurrences is of erratic value. There has been considerable controversy regarding the efficacy of smallpox vaccine. Clinically, it is often of benefit. Three to six vaccinations should be given two weeks apart by the multiple puncture method. More trauma than usual should be employed to produce a reaction even in immune persons. If this does not give the desired therapeutic effect, the capillary tube containing the vaccine can be broken at each end and the contents aspirated into a tuberculin syringe through a 25-gauge or 26-gauge needle. This can then be administered intradermally. If there is little reaction to this maneuver, two tubes may be used. A course of superficial x-ray treatments (6 to 12 weekly doses of 50 to 60 r each given at a half-value of 0.6 to 0.7 mm. of aluminum) may be of assistance in breaking the cycle of recurrences. In any regimen, the precipitating factors of this condition should be controlled if possible. These include premenstrual tensions, fever, upper respiratory infections, psychoso-

matic influences, gastrointestinal upsets, physical factors (such as sun, wind, and trauma), allergies, and drugs. In the patient described, the use of tranquilizing agents for one week before the expected menstrual period and during the first two days or so of flow would be worth trying.

ANSWER.—In view of the fact that the herpes simplex recurs before each menstrual bleeding, it is advisable to use the remedies that have been found helpful for premenstrual tension. The simplest and least expensive of these is ammonium chloride. The patient should take 0.6 gm. of ammonium chloride three times a day during the two weeks before the menses are expected. During this time she should curtail the use of table salt as much as possible. Another simple and effective remedy is the use of a 10-mg. tablet of methyltestosterone taken orally or a 5-mg. sublingual or buccal tablet daily for 10 days before the expected onset of the menstrual flow. There are also propietary preparations for premenstrual tension. In addition, the patient should be made comfortable until the disease runs its natural course. The local areas should be kept dry and should not be covered by ointments. An antibacterial lotion is sometimes helpful, as is also hydrocortisone.

## CONSENT OF PATIENT TO RELEASE INFORMATION

TO THE EDITOR:—*A pathologist frequently gets requests from other hospitals for copies of tissue reports and for tissue sections concerning patients who formerly were patients in his hospital but who now are in other hospitals. Sometimes the requests are in the form of informal letters from the doctor concerned, the medical superintendent, or the record-room librarian. On other occasions, the letter of request is accompanied by an elaborate certificate signed by the patient and even bearing the signature of a witness. One such certificate stated in large bold type: "No physician or institution may give out confidential information concerning the care of a patient without the consent of the patient or the legal guardian. The signature should be witnessed." Should the written or verbal consent of former patients be required before the tissue report and tissue sections are sent to the hospital asking for these items?*

*M.D., New York.*

ANSWER.—At common law confidential information concerning the care of a patient was not privileged, but this has been changed by statute in a majority of states. The basis of the privilege is that a physician is unable to adequately administer treatment to a patient without a full disclosure by that patient of information relating to his condition. Evidence obtained at autopsy is not privileged, and a dead body is not a patient. So far as hospital records tend to disclose what a physician learned in his attendance on a case, such records are protected by the rule of privileged communications, as much so as if the physician was being examined as a witness (*Toole* v. *Franklin Investment Co.* [Wash.], 291 Pac. 1101; *Metropolitan Life Ins. Co.* v. *McSwain* [Miss.], 115 So. 555).

Aside from the restrictions that exist by statute, the maintenance of proper relations with patients requires that hospitals and physicians respect the confidential nature of information received from patients or obtained in the examination or treatment of such persons. Copies of tissue reports and tissue sections should not be released by the hospital pathologist without permission of the patient. In order to avoid the possibility of misunderstanding, such permission should be obtained in writing and signed by the patient or his legal guardian and not his attorney. It is not necessary but as a matter of practice it is desirable to have the patient's signature witnessed by a responsible person to assure its authenticity. It is also desirable as a matter of professional courtesy to advise the patient's physician before sending tissue reports or tissue sections to other hospitals.

## TRANSIENT "BLACKOUT" OF VISION

TO THE EDITOR:—*A 14-year-old boy complains of episodes of complete blacking out of vision when rising from a sitting or lying position, occurring only when he has been sitting or lying for a period of an hour or so. The attacks are not associated with dizziness, vertigo, or loss of consciousness. After a few seconds the vision returns completely without any residual effects. The history reveals an intestinal allergy to milk (constipation and cramps). Blood pressure is 120/70 mm. Hg. Complete neurological and physical examinations and blood and urine studies were negative. Muscle tone is excellent. He weighs 130 lb. (59 kg.) and is 5 ft. 9 in. (175.26 cm.) in height. He has myopia (20/600) in each eye corrected by glasses to 20/20 in each eye. Eyegrounds are normal. Please give an opinion of this case.*

*Samuel Alper, M.D., Brooklyn, N. Y.*

This inquiry was referred to two consultants, whose respective replies follow.—ED.

ANSWER.—The symptom described occurs commonly in people who have had a sympathectomy or who are taking ganglion-blocking agents for hypertension. By analogy one might then suppose a hypoactive sympathetic nervous system. In the recent neurophysiological terminology, this would be called a delay in the feedback from the peripheral postural reflexes to the sympathotonic centers in the brain. It might be of interest first to record the blood pressure with the boy in both the recumbent and upright positions and second to administer 0.2 to 0.3 cc. of epinephrine solution 1:1,000 intramuscularly just before the patient rises to a sitting position. This is a diagnostic not a therapeutic suggestion, since no treatment is indicated for these transient "blackouts."

ANSWER.—From the information given it appears that there are no organic disturbances and that the blacking out of vision is, therefore, on a functional basis. It is difficult to picture complete blacking out of vision on a circulatory basis without vertigo or loss of consciousness. However, it is possible that a hyperactive carotid sinus might produce this syndrome. Carotid sinus pressure would settle this point. Blood pressure determination should be made with the pa-

tient both in the sitting position and in the lying position to rule out positional hypotension. There is a possibility that the blacking out of vision might be on a psychogenic basis, in other words, a manifestation of hysteria.

## HORSE DANDER ALLERGY

To the Editor:—*A 9-year-old girl who is very fond of horses and who has been riding since the age of 3 has developed an allergy to horse dander, characterized by itching of the eyes and nose and, when she is exposed to a heavy concentration of horse dander, by paroxysmal sneezing. She had been able to suppress the symptoms almost completely by the use of antihistamines. Is it harmful to her to continue riding? Is desensitization advisable?*

*M.D., New York.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—This patient is an atopic individual and a likely candidate for respiratory allergic disease. Nevertheless, it is not harmful to her present health to continue riding if her relatively mild symptoms are controlled by antihistamines. Prolonged exposure to an allergen may increase the development of sensitizing antibodies but not of blocking or immune antibodies. Antihistamines simply suppress the acute prevailing symptoms, in this instance, vasomotor rhinitis, by blocking histamine. Except under occasional circumstances, antihistamines will not prevent the more severe forms of allergy such as asthma if the exposure is sufficiently marked. Desensitization to horse dander is advisable if necessary, since it may afford better protection against the subsequent development of asthma due to horse dander than antihistamines alone.

Answer.—While antihistamines may suppress symptoms of allergy, they do not prevent progress of an allergic condition. If the condition is not spontaneously decreasing in severity, continued exposure to horse dander may permit the allergy to increase in severity so that asthma may occur. Moreover, it is possible that continued exposure to a potent allergen such as horse dander may produce greater susceptibility to sensitization with other allergens despite the use of antihistamines. Desensitization with horse dander is difficult, dangerous, and frequently only partially successful. It should be noted that antitoxins derived from horse serum are dangerous in such patients. Active immunization with tetanus toxoid and maintenance of immunity with "booster" doses is essential in such individuals.

## GARBAGE DISPOSAL

To the Editor:—*Please discuss the various methods of garbage disposal.* *M.D., California.*

Answer.—There are at present five common methods of garbage disposal being used in the United States.

*Open Dump Method.*—The open dump method describes the situation where the refuse of a locality is left uncovered at ground level or in a trench for a period of more than one week. The use of the open dump generally constitutes a public nuisance and is not a sanitary procedure for refuse disposal.

*Incineration.*—Incineration requires the complete reduction of garbage and other waste to ash through burning. Modern municipal incinerators properly supervised are an excellent method of garbage disposal. Failure to completely incinerate garbage results in the reduction of the garbage to a mass of organic material that presents further sanitary disposal problems. Such organic residues may well constitute a fly and rodent attractant.

*Sanitary Land Fill.*—Sanitary land fill may be defined as a method of disposal of all refuse and garbage by thoroughly compacting and covering with earthen fill to the proper depth each day's accumulation of refuse. This method is considered by most authorities to be the most sanitary procedure for the disposal of garbage and rubbish.

*Incineration and Sanitary Land Fill.*—Incineration and sanitary land fill combine the two methods mentioned and assure the municipality that the incinerated residual will not contribute to the breeding of flies and rodents.

*Mechanical Grinding Units.*—Use of mechanical grinding units results in the reduction of organic material by thorough grinding or pulverizing such materials through the use of mechanical devices. Pulverized material is then discharged into the municipal sewer lines and thereafter, along with other fluid waste, receives treatment at the sewage disposal plant. Where this method is used, careful surveys of the adequacy of municipal sewers and sewage treatment plants must be made.

## CHROMHIDROSIS

To the Editor:—*A 17-year-old girl states that for the past five years everything white that she wears or comes in close contact with, such as slips, brassieres, girdles, bed linen, pajamas, and shirt waists, becomes discolored after a short term of use. This discoloration is "greyish" and to the girl's mother and her sister is so apparent that they can immediately tell which clothes the patient has worn. The girl has no obvious physical disease. Her skin is normal on examination; it is warm and dry, and there are no signs of any excessive sweating. I would appreciate information on the etiology of this rather peculiar condition.* *M.D., New York.*

Answer.—The patient described in this question probably suffers from chromhidrosis, a rare, poorly understood entity, in which the patient excretes colored perspiration. It may not be excessive in amount. There is no one known cause. A variety of substances may produce such a condition, including the excretion of dyes or metals (including silver) or the presence of chromogenic bacteria, viruses, or fungi. The dye may come from foodstuff, drugs, clothing, or cosmetics. Anything that increases perspiration will increase the discoloration. This, of course, includes fever, hot weather, exertion, or psychosomatic influences such as nervousness, anger, and fear. Treatment is difficult

and often unsuccessful. Avoidance of factors causing perspiration should be stressed. Cleanliness and washing with an antiseptic soap or detergent is recommended. The wearing of dark-colored clothes and the use of colored cosmetics should be forbidden. Rubbing-alcohol sponge baths would tend to decrease the bacterial flora of the skin. In addition, consideration must be given to the other factors mentioned above.

## X-RAY TO THYMIC AREA

To the Editor:—*Please supply information concerning recent publicity in the lay press regarding x-ray therapy for enlarged thymus. There is some claim to this being a specific factor in later cancer of the chest.* *A. R. Tolk, M.D., Brooklyn, N. Y.*

Answer.—From the evidence available it would seem that there is more than a coincidental relation between thyroid carcinoma and previous x-ray therapy to the thymus or other tissues in the thyroid area. Duffy and Fitzgerald (*Cancer* 3:1018, 1950) suggested such a relationship. Simpson, Hempelmann, and Fuller (*Radiology* **64**:840, 1955), who reported on the frequency of neoplasms in 1,400 children who had had x-ray therapy to the thymic area, found the number of cases of thyroid cancer markedly higher in the treated group than in untreated children or the general population. Clark (*J. A. M. A.* **159**:1007 [Nov. 5] 1955) reported 13 cases of thyroid carcinoma in children. All had had previous x-ray therapy to the thymus, cervical glands, or tonsils and adenoids. He stated that about 191 such cases had been reported.

It is now accepted by pediatricians that a widened mediastinal shadow due to a large thymus is not the cause of frequent sudden deaths as previously reported. On careful postmortem examination, causes other than a large thymus are found. With the above evidence it would seem that x-ray therapy to the mediastinal area should not be undertaken because of the presence of a large thymus alone. Thyroid carcinoma usually occurs six or more years after x-ray therapy.

## CARCINOMA OF THE PROSTATE

To the Editor:—*Is it true that, in patients with carcinoma of the prostate resistant to estrogens, a cautious trial of androgens is justifiable?*

*Frederick S. Howard, M.D., San Francisco.*

Answer.—There is no evidence to show that a cautious or any other type of trial of androgens is justifiable in patients with carcinoma of the prostate resistant to estrogens. A number of years ago, an occasional patient was found to respond temporarily in general health to large doses of androgens when suffering from carcinoma of the prostate with multiple metastases. The brevity of this improvement was emphasized by rapid dissemination of the disease and subsequent death. It has since been shown that the temporary improvement in these patients was due to the effect of the androgens on the patient alone and not on the carcinoma. At present, any patients resistant to estrogens (presumably patients in whom estrogens do not cause a regression of the disease) are subjected to castration, or bilateral orchiectomy, and in the past bilaterial adrenalectomy was done. The latter procedure was not practical and has been given up in most instances. More recently, hypophysectomy has been tried in a few instances to see if removal of this source of stimulation for androgen production would result in improvement. These procedures, of course, are extremely radical and are rarely done.

## IMPOTENCE

To the Editor:—*A 64-year-old patient has become depressed because he is unable to maintain an erection. A brief trial with testosterone injections was futile. Please supply advice as to management of this case.* *M.D., New York.*

Answer.—Impotence is often a normal development in a person 64 years of age, and it should hardly be of any great concern to him or his wife, if she is of a similar age. It is usually not helped by any aphrodisiac medication. The fact that he is disturbed to the point of depression might suggest a psychic factor to account for his difficulty, and it would be well to exclude this. It is also well to remember that impotence is a complication that is sometimes caused by constitutional disease such as diabetes, hepatic disease, and other lesions. In order to exclude this, it would be necessary to do a careful physical examination.

## PREPUBERAL BREAST PAIN

To the Editor:—*In the Query and Minor Note in* The Journal, *Nov. 10, 1956, page 1101, entitled "Prepuberal Breast Pain," the consultant states that "pain in the nipples and breast is an infrequent symptom in girls of prepuberal age." I disagree with this statement. Prepuberal breast pain and soreness is present in nearly all normal'y developing breasts. The preadolescent girl with this complaint is usually brought to the doctor by her mother because of enlargement and pain in one breast. The same symptoms usually appear in the second breast in two to four months. Since girls of the prepuberal age are most modest, it is very likely that before seeking medical advice they "compare notes" with other girls of about the same development. Then, finding that many of their companions have the same breast soreness, they accept this discomfort philosophically and silently. In spite of disagreement as to the frequency and cause of prepuberal breast pain, I agree with the conclusion: "a frank discussion with the patient, with the assurance that there is no actual disease or tumor growth present, is usually sufficient."*

*Belle DeCormis Fears, M.D.*
*Accomac, Va.*

The above letter was referred to the consultant who answered the original Query and Minor Note. His comment is as follows:

To the Editor:—*While rapidly growing breasts are sometimes sensitive, as a rule there is no nipple or areolar pain such as was described in the original inquiry.*